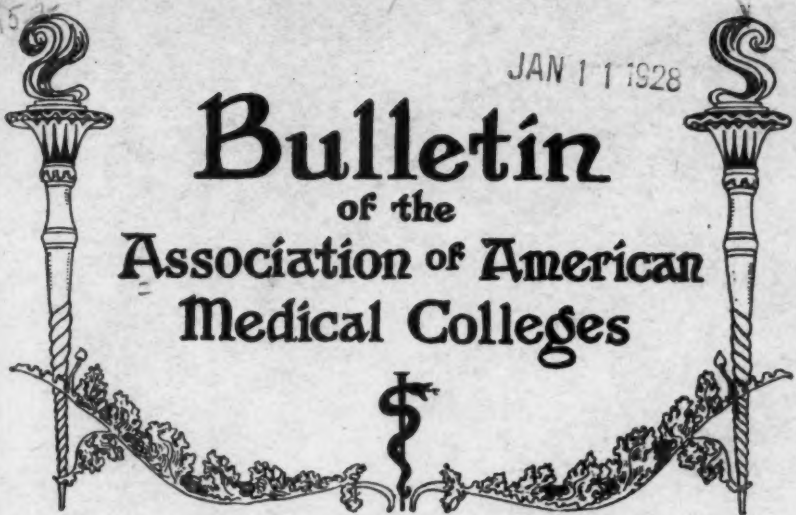


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*Continued on Third Cover Page*







## TEACHING ANATOMY IN THE UNIVERSITY OF MANITOBA\*

J. C. BOILEAU GRANT

Professor of Anatomy and Head of the Department, Winnipeg, Manitoba

Your secretary has asked me to say something about our method of teaching anatomy to undergraduate students in the University of Manitoba. I am not sure whether I feel more the honour or the embarrassment of having to speak before so illustrious a gathering.

At the outset, I would have you know that I am not one of those who believe they have a message which must at all costs be delivered to the world, neither am I one of those who are perpetually and profoundly dissatisfied with all present methods of teaching, regardless of what those methods may be—who restlessly seek for change in everything.

As undergraduates we were taught the structure of the human body thoroughly and well. Like others I was, and am, influenced by the environment and by the traditions of the school which was my cradle, and I teach much after the fashion in which I was taught. I have, however, long felt that anatomy would have meant much more to me, had I been led at an earlier stage of my career to appreciate more thoroughly a number of these general principles, which, as it is, have formulated themselves under the guidance of experience.

It is by the application of principles (or generalizations) and by the correlation of facts that we, in Manitoba, endeavour to guide and to teach our students to think and to reason anatomically. I am not using the term "principles" in the platitudinous sense in which it is so often used. For example, I remember a certain teacher, who in his lectures had a strange obsession for explaining at great length how certain conditions could be diagnosed from a careful study of the nature and distribution of referred pains; but, in his clinic this teacher never made mention of these pains. He struck me as being like one who was inconsistently a Christian on Sundays and a pagan on week days, for though he sang the praises of referred pains during lecture hours, he committed the sins of omission against them at all other times. As a teacher he was a failure. If you will bear with me for a short time, I will explain what I mean by applying principles, by correlating facts, and by reasoning anatomically.

Not long ago a surgeon of some unmerited renown remarked to me that he saw no purpose in requiring students to commit to mem-

\*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.

ory such useless details as, and he gave for instance, the attachment of the adductor muscles of the thigh. I thoroughly agreed with him that the attachments of these muscles should not be committed to memory; I agreed that their attachments were, perhaps, of no great importance; but, at the same time I told him that we expected our students to know, not merely the attachments, but also the nature of the attachments of muscles; whether they are fleshy or tendinous or aponeurotic. Our students appreciate such matters; they are, moreover, aware that if they could not answer such questions they would be liable to come to grief for displaying ignorance, not of origins and of insertions, but of the first principles of anatomy.

Now, this surgeon knew thoroughly well that on the back of the femur there extends a rough line, the *linea aspera*; he knew that the rest of the shaft of the bone is smooth, but these points meant nothing to him. He was one of the many "Peter Bells" of whom Wordsworth said, "A primrose by a river's brim, a yellow primrose was to him, and it was nothing more". And, all the time this surgeon was in possession of the information necessary to describe the attachments of these adductor muscles. He had dissected the human body, but had evidently failed to observe the evident fact that there are two possible causes for rough markings on a healthy bone. One is the site of an old epiphyseal line; the other, the attachment of fibrous tissue, be it tendon, ligament, fascia, dura mater, or the like. As the *linea aspera* is patently not an epiphyseal line, it must, by exclusion, be the site of attachment of fibrous tissue. And as the quadriceps femoris muscle monopolizes the smooth parts of the circumference of the shaft of the femur, the attachment of the adductors must, again by exclusion, be the *linea aspera*, and, therefore, must be aponeurotic. This, incidentally, is not a piece of useless information. It has at least the following clinical significance: The femoral artery is separated from the profunda femoris artery by the adductor longus, and as these vessels lie close to the femur, it follows that it is the aponeurotic and not the fleshy portion of the adductor longus which divides these vessels from each other. Accordingly, the ragged end of a fractured femur, a gunshot wound, a stab, or a tumour, involving one vessel is very liable to involve the other. Or, again, a surgeon performing an amputation through the thigh, having tied the femoral artery, will not require to grope about for the profunda femoris but will find it separated from the parent vessel only by the thickness of an aponeurosis.

This paper was written with the object of demonstrating that descriptive anatomy is a subject of which the details are only likely

to be remembered if they are understood. It was my endeavour to point out by what methods such an understanding might be reached. In doing so, I made use of a considerable number of lantern slides, and as the number of illustrations I am permitted to reproduce is naturally limited, this paper must, to a like extent, be abbreviated.

*Diagrams A and B.* When we assume the erect posture our line of gravity passes behind the centres of our hip-joints. In consequence of this, our trunk tends to fall backwards, or rather to rotate backwards, the points on which it pivots being the heads of the femora. To resist this backward rotation the capsule of the hip-joint is thickened in front. The thickening is known as the ilio-femoral ligament, or the "Y"-shaped ligament of Bigelow.

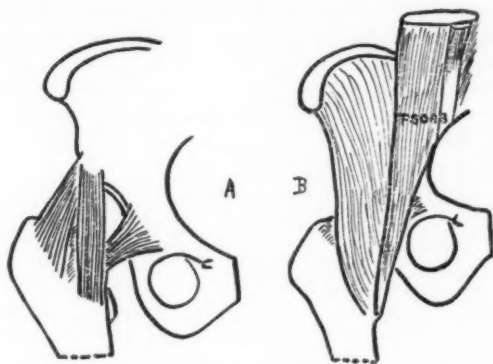


FIGURE 1 (A. AND B.)

In a ball and socket joint which permits of free movement in all directions, it is self-evident that the ball must have a larger articular area than has the socket. While we stand erect with toes turned outwards, the excess of articular cartilage on the ball-like head of the femur is directed forwards, as may be seen from the diagram. And, whereas the lateral part of this exposed area is protected by the ilio-femoral ligament, and the medial part by the pubo-capsular ligament, the intermediate part, which most requires support, has no ligament at all to protect it. We are not, however, to accuse Nature of constructing a mechanically insecure joint, because a moment's investigation will reveal to us that playing across this critical area is the tendon of the psoas. Microscopically, tendon and ligament are the same: functionally, there is this difference between them—a ligament

is a passive structure, whereas a tendon, in virtue of the muscle at its upper end, is active and alert. If we appreciate the beauty of this device, we do not require to tax our brain in order to remember the relations of the tendon of the psoas to the joint. You will note, I say tendon of the psoas, and not merely psoas. This is because one of our generalizations is, that muscle fibers cannot live if subjected to such pressure as the rubbing against a bone, joint, annular ligament, or other resistant structure would exert. Employing this generalization, we might have inferred that the psoas must here be tendinous.

Another generalization is, that even tendons at such locations insist upon having a roundish bursa, or a tubular bursa (i.e. synovial sheath), to diminish friction and so to facilitate their free play. To this generalization the psoas tendon is no exception, hence the sub-psoas bursa which often communicates with the hip-joint. The clinical importance of this bursa is associated with such affections as tuberculous disease of the hip joint and tuberculous disease of the lumbar vertebrae. If the psoas becomes tendinous, it follows that its insertion should be into a rough piece of bone, in short, into the small trochanter of the femur.

In front of the psoas tendon lies the femoral artery, but the surgeon would not endeavour to arrest hemorrhage by compressing the vessel at this site because, as we have just seen, posterior to the tendon is the movable head of the femur. Anyone who has dissected the adult human cadaver must know that the psoas tendon is not as large as one's little finger: if, therefore, the femoral artery is in front of the tendon it is clear that there is no room there for anything else. For reasons which we shall not delay to explain, the femoral nerve lies lateral and the femoral vein medial to the artery. These structures, accordingly, must have different posterior relations. The nerve lies in front of the iliacus muscle, and the vein in front of the pectineus muscle. These, though, are but names, and you can neither dissect nor operate upon names. The information which is of value to us is not the names but the following: The nerve is separated from the hip-joint by the thickness of the iliacus, the femoral artery by the tough psoas tendon, and the vein by only a thin fleshy film of pectineus.

These observations dealing with the position of the head of the femur, with the position and function of the ligament of Bigelow, with the position of the psoas, with the fact that it is tendinous, that a bursa serves to "lubricate" it, and that the femoral vessels and nerve must be separated from the hip-joint by different structures,

all follow one another in logical sequence. We do not try to memorize, but to understand.

*Diagram C.* This diagram was designed in order to make clear that the clavicle acts as a strut which thrusts the scapula, and therefore the upper-limb, towards the back of the chest. This being the case, it follows that the interarticular disc, which anchors the clavicle to the first costal cartilage, and the coraco-clavicular ligament which suspends the scapula from the clavicle, are essential to the action of the strut. Destroy any one of the three and the whole mechanism collapses. A blow or fall upon the shoulder tends to drive the humerus, and with it the scapula, towards the breast bone. In order

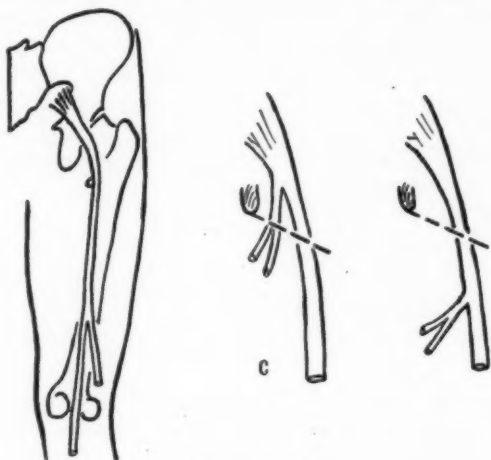


FIGURE 2 (C.)

to resist such displacement the fibers of the coraco-clavicular ligament must pass from the clavicle downwards and medially to the coracoid process of the scapula. The clavicle transmits the force of the impact to the first costal cartilage via the interarticular disc, which disc, if it is to be of service in this respect, could be attached in no other manner than that shown in the diagram.

*Diagram D* suggests that morphologically the sterno-clavicular, the costo-clavicular, and the coraco-clavicular ligaments are the fibrous (degenerated or transformed) ends of a disappearing sub-clavius muscle. For, like the parent muscle, the sub-clavius, they all agree in that their fibers are directed laterally and upwards. If these

details are appreciated, it is a very simple matter to recall to mind the direction and attachment of the fibers of these ligaments.

*Diagram E* will recall to your minds the fact that the sciatic nerve passes between the great trochanter and the ischial tuberosity. It supplies the hamstring muscles. This is the collective name given to the muscles which arise from the ischial tuberosity, and which are inserted into either the tibia or the fibula. Now, it is at once reasonable and correct to suppose that the nerves to these muscles spring from the ischial side (i.e. from the medial side) of the sciatic nerve. We have, here, a useful principle which we may word thus: the side from which a motor nerve leaves its parent trunk is constant. It leaves it from the side nearest the muscle it supplies, but—and note this well—the level at which it arises is variable. Nerves have, therefore, their sides of safety and their sides of danger: a side on which it is safe to dissect or operate, and a side on which one must

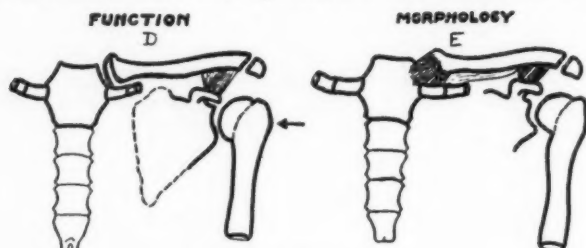


FIGURE 3 (D. AND E.)

work with great caution. I know a surgeon on another continent, who, while operating in the gluteal region, remarked that the sciatic nerve supplied no muscle in that region, whereupon he proceeded freely to expose the nerve. Had he reasoned thus "the branches of the sciatic nerve supply the hamstring muscles and, therefore, arise from its ischial side, I, therefore, shall work on the side of safety, which is its trochanteric or lateral side," he would not have stripped off the branches to the biceps and semitendinous, which in this case happened to arise much higher than usual. This principle is notably applicable to the internal popliteal nerve, and to the median and radial nerves at the elbow.

It is my belief that in certain schools an undue proportion of the medical students' time is occupied with the subject of embryology. The study of this branch of anatomy is relatively young. Perhaps its youth and charm, rather than its utility, are responsible for the prolonged and serious attentions which are lavished upon it. A gen-

eral knowledge of this subject forms a necessary part of a medical education, and is invaluable in assisting us to appreciate certain relationships, especially perhaps those of abdominal structures, as the remaining diagrams suggest.

*Diagrams F, G, H, I, K.* These diagrams illustrate the relationships of structures in two important medical and surgical regions. One is the region of the duodenum, bile ducts, and pancreas: the other the region of the genito-urinary organs. These must serve to illustrate my contention, and I know that Professor Whitnall thinks with me. I hope they will prove to your satisfaction its correctness.

*Diagrams F and G* represent the developing pancreas. We see it arising as two buds. The one, which arises in conjunction with the common bile duct from the front of the duodenum, becomes the

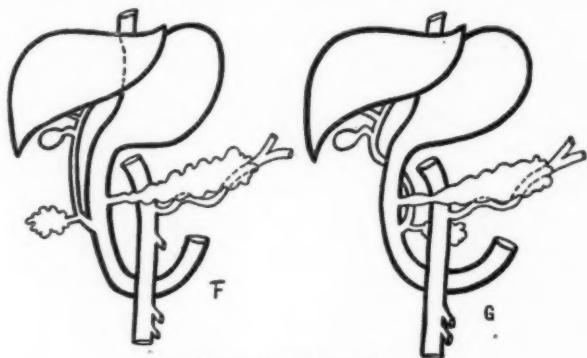


FIGURE 4 (F. AND G.)

head of the pancreas: the other, arising independently from the back of the duodenum, becomes the accessory duct, the neck, body and tail of the pancreas. A rotation of the duodenum on its long axis takes place, with the result that the head of the pancreas is carried behind the portal vein. The two rudiments of the pancreas thus close upon the portal vein, much as one might close a book on a book-mark. The common bile duct, which of necessity has to follow suit, now passes posterior both to the accessory duct and to the first part of the duodenum.

This picture should be in the mind of the clinician who wishes to be familiar with the anatomy of this region.

The frequency with which the main and accessory ducts become united, and the rarity with which the accessory duct remains in open



communication with the duodenum are matters for statistical rather than for descriptive anatomy.

*Diagrams H, I, and K.* It is common knowledge that during pre-natal life the testis and ovary descend, and that the kidney ascends. And, furthermore, that at times their migrations are arrested. On the left side of diagram H, the sex gland (testis or ovary) is depicted during its descent; the kidney during its ascent. On the right side of the same diagram these organs are represented as having

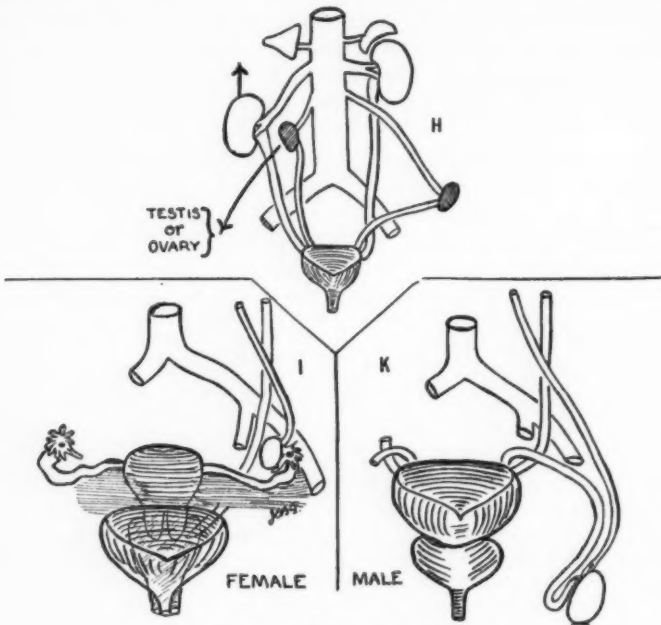


FIGURE 5 (H, I AND K.)

completed their wanderings. The duct of the testis is called the vas deferens, the duct of the ovary is called the uterine tube. It is true that the vas deferens develops from the Wolffian duct, and the uterine tube from the Müllerian duct. These, however, are but names for two ducts which develop in the embryo and which lie side by side throughout their course, till eventually one predominates in the male and the other in the female. The broad ligament (mesosalpynx) is to the uterine tube what the mesentery is to the intestine. In each



case the respective tube (Diagram I) occupies the free edge of the peritoneal fold for whose existence it is responsible. If the uterine tube occupies the free edge of the broad ligament, then it goes without saying that the ureter, on its way to the bladder, must pass behind that tube. In other words, the duct of the ovary is anterior to the ureter. Therefore, we are entitled to reason that the duct of the testis (Diagram K) conforms and likewise passes anterior to the ureter. If, during their descent, the ovary and testis drag their ducts in front of the ureter, they must also drag their vessels (ovarian and spermatic) in front of it. Thus, by a logical train of thought, we arrive at the conclusion that in the female the ureter is crossed anteriorly by the uterine or Fallopian tube and ovarian vessels: in the male by their equivalents, the vas deferens and the spermatic vessels.

Briefly, then, these and such things run through and dominate our teaching of gross anatomy in the lecture theatre, in the tutorial class, and, as we pass daily from table to table, in the dissecting room. At times, we make an appeal to a principle, or it may be to a consideration of function, or again to some important clinical point. At another time an embryological, or, it may be, a morphological explanation clears up an otherwise difficult point, and often our appeal is to the simple and obvious. Due regard is paid to the common and important variations in the human body, for each student is detailed to investigate all the cadavera in the rooms for some specified point, such as, the number of notches in the spleen, the presence of accessory hepatic ducts, the variations in the distribution of a certain nerve, vessel or tendon, and the like. In this way, he becomes forever acquainted with the fact that no two human beings are identical in construction. Each student, moreover, makes a careful dissection, which, if of sufficient merit, is placed in our museum as a lasting record of his work.

After passing his professional examination, the student remains under the influence of the anatomical point of view during his third and fourth years. This is accomplished by means of a demonstration per week devoted to the subject of applied anatomy, instruction in which subject is under the care of a practising surgeon who has special anatomical training.

In the teaching of anatomy there are four important elements—a student, a cadaver, a teacher, and a sufficient amount of time. All else is subsidiary to these. In my experience, part time assistants may be demonstrators, but for the most part, they are apt to be

untrustworthy as teachers, and the function of imparting instruction we are not prepared to leave to their care.

Now, I am fully aware that the bare, the dry, the unadorned and unrelated facts evaporate from the memory as soon almost as the objects of study are withdrawn from the vision. It is my belief, that one should not attempt the almost hopeless task of trying to commit to memory bald anatomical details, but the important relationships and facts should always be within certain and easy recall. I have tried to show how pictures of relationships may be summoned up so as again to become vivid and very real.

### THE PLACE OF LIVING ANATOMY IN MEDICAL SCHOOLS\*

EBEN J. CAREY

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Milwaukee, Wisconsin

The living human subject is neglected by many instructors in the teaching of gross anatomy in the medical schools of the United States and continental Europe; the art of anatomy in contrast to the science, thereof, is not emphasized.

Why embalm the subject of anatomy so thoroughly that no living germ of action may proliferate? Why raise the phenolic index so high by our arterial injections, in emphasis on statics, that our material becomes completely sterile as far as dynamics is concerned? Who is to blame for this quiescent fossilized condition of anatomy? Many blame Johannes Müller of Germany (1840-?) who is credited with writing 40 pages of text of descriptive morphology a week for over ten years.

He is credited with divorcing structure from function. He is called the father of descriptive morphology. He did this necessary work well. There is no reason why the present day living anatomists should continue to bury their subject in the graveyard of pure description of structures isolated from function.

The purpose of living anatomy is to aid the medical student to assemble certain analytical deadhouse facts of anatomy for use on, and in the normal living human body. The scientific acquisition of gross anatomic facts by dissection is a prerequisite. This analysis, however good in itself, is inadequate and does not thoroughly equip a medical student to establish norms in the living and falls short in

\*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.

the preparation of students for their courses in physical diagnosis and clinical studies.

The medical student whose sole pursuit of anatomy has been restricted to the dissection method, has a circumscribed, inadequate static knowledge of the subject matter. The majority of medical students realize this with their advent into the clinical studies. The clinician is interested in the dynamic anatomy of the living; the medical student possesses a static knowledge of the dead.

Who bridges this chasm between the clinical teacher and the student? Some basic science teachers place the responsibility on the shoulders of the clinician; the latter, never outdone in the art of quarterback qualities, pass the blame of inadequate anatomical teaching of students to the former. While this game is going on, the medical student suffers. He is left to acquire his knowledge of the living in the same way, many clinicians did or did not acquire it in the past; namely, by the method of trial and error, by long years of independent study, providing the clinicians were prudent, patient and had perseverance. He may also gain an isolated bit of living anatomy with a jolt, producing psychic trauma, when he first enters the clinic, as follows: "You, what muscles cause the deformity of that limb," or, "You, tell me what you see in that normal ear drum." The student is before his first live patient with an intracapsular fracture of the neck of the femur or is delegated to examine an ear drum. While the student is still in oblivion as regards the answer of living anatomy, the voice of the clinical inquisitor continues. "Where did you learn your anatomy?" The student ponders to himself, "Yes, where did I learn my anatomy?"

If an automobile mechanic's knowledge were to be purely descriptive, and consisted solely in pulling the parts of the automobile asunder and classifying them, and if this knowledge were not extended to the art of his profession manifested by assembling those parts together into a moving mechanism, the driver of the stalled automobile would find little use for this type of mechanic. Such a mechanic's knowledge would be purely static, analytic and not dynamic or synthetic. The majority of medical students leave the anatomy department with this type of analytic knowledge but it should be extended further by becoming synthetic. The beginnings of this synthetic knowledge of the normal living human body should be the possession of each medical student before he is admitted to clinical studies.

The living human subject is one of the most efficient means of teaching normal anatomy. Information as well as practical interest

may be induced and the student readily grasps this type of knowledge as a need of the physician in his daily associations with the sick. There are many basic facts in anatomy used by the clinician which may be taught without the aid of dissection. In institutions in which the dissection method is the sole means of imparting anatomic knowledge to medical students, the facts of normal living anatomy are seldom obtained in a correlated manner except at the expense of considerable valuable time. Guidance is needed in the study of the living subject as well as in the study of the dead one. To prevent loss of time, such a course in living anatomy should be outlined carefully and the work of the student supervised closely.

When a medical student begins the study of anatomy he has many facts of the living human body, acquired by ordinary experience, which are fundamental in the science. He has used his arms, legs and trunk in muscle action in football, baseball, gymnastic exercises, swimming, boxing, track work, climbing and walking. He knows that the respiratory rate is increased by exercise and decreased by rest. He has seen cripples walk the streets with certain characteristic gaits and attitudes. He has a general notion as to the attributes of well developed and well nourished individuals. He knows that long continued faulty posture has its effect in the production of round shoulders and other characteristics. He is taught to stand erect in a soldier-like attitude. He knows that muscles in certain regions may be affected with the "charley-horse," and he may have experienced cramps in muscles while swimming. If he has practised on the piano, he knows that the fourth piano finger or the third violin finger are the weakest ones. He has seen persons with cross eyes. He talks and has attempted to sing. By palpation he has felt his own pulse and the apex beat of his heart. He knows that both are accelerated by exercise and retarded by rest. He masticates and swallows his food. If indisposed, he may have vomited or had hiccough, and he has experienced a periodicity in bowel movements. He knows what is meant by body temperature and that it is increased with fevers. He has exercised the faculties of the five senses: sight, hearing, taste, smell and feeling. He has struck his "crazy bone" and experienced the resultant localized tingling or temporary palsy. These facts, and many more, are known to the intelligent student when he begins the study of anatomy.

After he has completed the dissection of the entire human body, or immediately after completing the dissection of a specific region thereof, the attitude of the student toward these familiar things and the words by which he designates them necessarily must undergo

changes. Casual information by empiricism must be transformed to sound knowledge with a purpose. Nebulous ideas about the meaning of terms must be replaced by exact definitions. Isolated pieces of knowledge must be placed into a structure with proper relationship to the whole. The student must learn the application of visualization. He must be able to see with the mind's eye the parts of the body as if each part were merely covered by a transparent veil and not an opaque skin, as expressed by Sir Auckland Geddes, formerly ambassador of Great Britain to the United States and professor of anatomy in McGill University. He must not only know structural relationship but the functional interaction of parts as well. The end in view in the dissection of the dead body is to gain exact knowledge of structure to be applied in the functions of the living.

The purpose of dissection, therefore, is to aid in the application of the analyzed facts on the synthetized living human body.

Who is to accomplish these changes? The answer is: the student himself. He must work with one end in view and that is, to know the parts and their functional and structural interrelationship in the whole living body. On the student, and on him alone, rests the final responsibility for the success or failure of his study.

The student must, however, receive assistance from his instructor and his textbook in the way of well organized opportunities of practise on the living who act as guides to stimulate, direct and aid his efforts. The student must do the walking and sightseeing. Constructive criticism and a well ordered plan of procedure on the part of the instructor accelerate the progress of the student and are absolutely essential.

That knowledge may be gained of the extent to which the practice of living anatomy was organized and carried on in the anatomy departments of the medical schools of the world, 296 questionnaires were mailed in March, 1927. One hundred and ten replies were received—57 from directors of anatomy departments in the United States and 53 from those in other countries. The countries outside of the United States and the number of anatomists who responded in each are as follows: Canada, 7; Australia, 2; Austria, 1; Belgium, 2; China, 1; Czecho-slovakia, 2; England, 3; France, 2; Germany, 14; Holland, 1; Hungary, 1; Ireland, 2; Italy, 3; Japan, 1; Poland, 1; Russia, 1; Scotland, 4; South Africa, 1; Spain, 1; Sweden, 1; Switzerland, 1; Syria, 1.

The 110 questionnaires returned, contained the following inquiries and answers:

1—Has your anatomical department independent roentgen ray equipment?

In the United States, 36 anatomists answered in the negative; 7 in the affirmative; 14 did not answer this question. Of the anatomists in the countries other than the United States, 29 answered in the negative and 20 in the affirmative. Four schools are planning the installation of roentgen ray equipment in the near future. Of the 29 who answered in the negative, 3 stated that this modality was used in conjunction with the roentgen ray department.

2—Do you use roentgenograms to teach medical students anatomy?

In the United States, 18 anatomists did not use roentgenograms and 39 did. In the countries other than the United States, 13 anatomists did and 40 did not use roentgenograms in teaching gross anatomy.

3—Do you use the fluoroscope to teach medical students anatomy?

In the United States, 42 anatomists did not use this method, whereas, 15 did. In the countries other than the United States, 37 anatomists do and 16 do not use the fluoroscope.

4—Do your students use reflected light to study the structure of the orifices and cavities of the living body?

In the United States, 42 anatomists do and 15 do not use reflected light as an aid. In the countries other than the United States, 39 anatomists do not and 14 do employ this method.

5—Do your students in anatomy mark out with a skin pencil on the living human body, the surface markings and surface landmarks?

In the United States, 27 anatomists do not use this method, whereas, 30 do employ it. In the countries other than the United States, 26 employ this method and 27 do not. By far the majority of anatomists, other than those of the United States, who are using this method reside in Canada, England, Ireland, Scotland, South Africa and Australia. The British trained anatomist emphasizes the anatomy of the living more than do those of continental Europe or of the United States. In Continental Europe, the consciousness of being one who is professing science—and not teaching students the profession of medicine—is deeply rooted by past training. Twelve of the fourteen German anatomists, however, were in hearty sympathy with the students' future. They expressed a desire to do more work in this relatively neglected field of living anatomy; they were either

planning to institute this aspect of anatomy in the near future or had already done so during the past year or two. Two German anatomists had employed this method quite extensively for many years.

6—Do your students study nerve action and muscle control on the living human body?

In the United States, 33 emphasize these functions, whereas 24 do not. In the countries other than the United States, 24 employ this method and 29 do not.

7—Do your students study the functions of the sensory nerves on the living human body?

In the United States 40 anatomists fail to carry on this work, whereas, 17 employ this method. In the countries other than the United States, 21 do and 32 do not use this method.

8—Do your students study the actions of the respiratory and circulatory systems in the living human body?

In the United States 24 do and 33 do not carry on this functional procedure; whereas, in countries other than the United States, 21 anatomists emphasize these functions, whereas 32 do not.

9—Do your students study the living human body as a whole? Namely, type of build, nourishment, development, height, weight, posture, record of temperature, pulse, respiration, skin, hair distribution, temperament, facial expression, gait?

In the United States, 20 emphasize this study, where 37 did not. In the countries other than the United States, 17 employ this method of study whereas 36 do not.

10—What other procedure do you employ in the teaching of living anatomy to medical students?

In the United States, 6 use the motion picture as an adjunct. Five anatomists use the hospital wards and one had his students carry on observations on the neighboring playground. In the countries other than the United States, motion pictures were employed by 5 anatomists.

11—Do you think that the medical students practice on the normal living human body sufficiently at the present time, in preparation for their clinical years of study?

In the United States, 7 anatomists answered in the affirmative, whereas, 40 did not think that this practice was sufficiently carried out. Ten were non committal. In the countries other than the United States, 16 answered in the affirmative and 37 in the negative.



12—Do you think that an independent course in normal living human anatomy, with the students studying their classmates, is of sufficient importance to be given either concurrently with the dissection work of the first year or during the second year of the medical course, subsequent to dissection?

In the United States, 26 anatomists were positive that such a course should be incorporated; 24 stated that an independent course should not be instituted but that this work should infiltrate the general course in gross anatomy, and 7 were non committal. In countries other than the United States, 25 anatomists stated that such an independent course should be given. Twenty stated that there should not be an independent course but that this viewpoint should be expressed in the teaching of gross anatomy; 8 were non committal.

It may be of interest at this point to enumerate a few of the opinions of anatomists in the United States and those residing outside of the United States in regard to the practice of living anatomy:

Dr. Herbert M. Evans, University of California Medical School, Berkeley, stated, "such a course would be decidedly worth while."

Dr. Charles R. Bardeen, University of Wisconsin Medical School, Madison, writes that, "a course in normal physical diagnosis in the first semester of the second year is to a large extent such a course as given at Wisconsin."

Dr. C. M. Jackson, University of Minnesota Medical School, Minneapolis, said, "such a course might well be given both during the dissection in the first year and amplified in the second. This is an important but relatively neglected field of anatomy."

Dr. H. von W. Schulte, Creighton University Medical School, Omaha, replied, "I am interested in this phase of the subject but hindered in available time. In general, I believe the closing of the gap between the laboratory and the clinic must be shouldered more than at present by clinical men. The clinical men are numerous and there is a shortage of man power in the laboratories."

Dr. Charles W. Poynter, University of Nebraska, College of Medicine, Omaha; Dr. R. M. Strong, Loyola University School of Medicine, Chicago; Dr. William F. Windle, Northwestern University Medical School, Chicago; Dr. Chas. H. Swift, University of Chicago, Medical School, Chicago, and Dr. V. E. Emmel, University of Illinois, College of Medicine, Chicago, all declared themselves in practically the same way that the work in living human anatomy should be taught with dissection.



Dr. Burton D. Myers, Indiana University School of Medicine, Bloomington, however, stated that he "would not favor this as a recommendation for all schools. It would succeed if you have some one who is interested. I believe that this work should be made an elective course for the third or fourth year."

Dr. O. V. Bateson, University of Cincinnati College of Medicine, and Dr. T. Wingate Todd, Medical Department, Western Reserve University, have the same viewpoint: "It is a mistake to segment dissection from all other methods of studying anatomy. Probably the greatest asset is a staff that understands that the cadaver once lived." Dr. Todd continues, "it is a pity to segregate all these features of a properly rounded anatomical course. You have seen the general methods employed here. It is unnecessary to itemize all of the possible phases of the work. The students' future is with the living human body and not with the dead. Consequently, if the members in the anatomical department realize this properly and take the students as apprentices, they cannot fail to have the proper training. The apprentice idea is the important one. Useful methods of technique, amplifying those that you mentioned, are the stereoscopic projection and the motion picture. The physiological movements of the heart, chest and alimentary canal may be shown in the movie. Watch out for risks with the fluoroscope, especially to the instructor."

Dr. Henry McE. Knowler, University of Alabama Medical School, said: "I am much impressed with the value of your questionnaire and should like to see a tabulation of answers. It would be most useful if you would put in our hands an outline of methods of carrying out such a course in living anatomy, under the headings included in your questionnaire."

Dr. Irving Hardesty, Tulane University of Louisiana School of Medicine, feels that "living anatomy should not be given at the expense of the now insufficient time allowed for study of actual structures and architectures."

Dr. Ernst Huber, Johns Hopkins University Medical School, Baltimore, answers that, "A course in living anatomy should be given concurrently with the dissection work of the first year. Considering the study of the living body of great importance, we urge our students constantly to study the structures and their functions on themselves and on their fellow students. This is done in connection with the work in the dissecting room in the first year, and in the elective course in applied anatomy in the second, third and fourth years."

Dr. Charles R. Stockard, Cornell University Medical School, New York, stated that, "It seems to me best to correlate the work in living anatomy with the dissection of the first year rather than separate it as an independent course. Such work, along with the routine dissection, vivifies the study and makes the student consider his own body and activities. It puts a wholesome, functional and analytical point of view before the students."

Dr. J. L. Bremer, Harvard Medical School, replied, "In the department of anatomy, strictly speaking, the answers to all of your questions would have to be 'No.' Yet in physiology much of the work is done, and in the second year of anatomy there is very close affiliation with the clinical teacher where x-ray pictures and surface markings are gone into very carefully."

Dr. A. S. Begg, Boston University School of Medicine, says: "We do not give a course in normal living anatomy because I am rather averse to adding to the number of courses already on the schedule. We do, however, encourage the students to undertake and study on their own account, and we find that there is an increasing tendency to do so. We also find that in our courses in physiology and physical diagnosis exercises are included which involve the points in your questionnaire."

Dr. J. C. Boileau Grant, University of Manitoba Medical School, remarked: "I am not in sympathy with too many independent courses, I believe that some of the above should be taught with gross anatomy, some with physiology and some with applied work."

Dr. S. E. Whitnall, McGill University Faculty of Medicine, stated: "Our whole theme is to emphasize living anatomy. Please let me know the result of this most interesting referendum."

Dr. Arthur Robertson, Edinburgh University, Scotland, answers: "The question of what should be done in the teaching of medical students is limited by the amount of time devoted to the given part of the subject. In the case of anatomy, the student during his course should gain a sound knowledge of the structures and function of the various organs; their grouping into systems; the relations of the systems to one another; he should also gain a sound knowledge of the relative positions of the structures in any given part of the body. Part of the knowledge he may obtain by means of lectures, demonstrations and by being asked questions and part by careful dissection, and by study of the living body. Our surface anatomy of the living follows the dissection of each part, and as the dissection proceeds, the student is encouraged to think about the use and function of

each structure he exposes. When I go into the dissecting room, I expect the student to be able to tell me what the object is that he is touching at that moment; where it is in his own body, or the body of a fellow student; what he uses it for; how he could most easily expose it in the living body, or if he makes a particular movement, what organs he used in making the movement. The student is encouraged to observe, to think, to ask questions and to reply to questions in a reasonable manner, giving reasons for his reply. With regard to the radiograms, the student is expected to study the groups placed out. At the examinations he is expected to say what the various parts are, in the radiograms that he is shown and from the condition of the bones, to give some idea of the probable age of the subject."

Dr. Alexander Lowe, University of Aberdeen, Scotland, said: "I certainly think that the medical student ought to have every facility provided for acquiring a first hand knowledge of living anatomy. This should be given concurrently with the dissection work."

Dr. H. K. Corning, University of Basle, Switzerland, replied: "We have no course in living anatomy. Being limited, I consider it far more important that the student should devote all his energies to acquiring a thorough knowledge of systematic and topographical anatomy. In the latter course attention is, of course, called to landmarks, but I incline to consider a special course in living anatomy as superfluous. Specialization defeats its own ends, when it goes too far. An ample supply of human bodies for the dissecting room is what we need above all."

Professor Sobotta, University of Bonn, Germany, advocates, "a course in living anatomy should run concurrently with the dissection."

Professor von Mollendorff, University of Kiel, Germany, is of the opinion, "the teaching of living anatomy must be further developed but the anatomist cannot do it alone. The physiologist and the clinician must teach living anatomy continuously."

Dr. Hans Petersen, University of Würzburg, Germany, states that the study of living anatomy was introduced by him in the last year.

Professor Curt Elze, University of Rostock, says: "I wish I could answer questions III and IX with 'Yes.' Several years ago I advocated the same thing although in a different form, but the principle was the same. Limitations of time and space, overcrowding with students have so far hindered the practical carrying out

these ideas. In the mean time, I study living anatomy with my students, as far as this is possible, within the limits of the lectures of anatomy and the periods of dissection."

Professor A. Brock, University of Utrecht, Holland, thinks "that it is of utmost importance that the students study living anatomy. They have to do so in their later practice. But in my old laboratory with a great number, far too great, of students and nearly no assistants it is really impossible to give demonstrations or lectures on the living model. The students work with a skin pencil on the landmarks on the body in the dissecting room and I advise them also, to do the same on their own bodies or the body of their classmates to learn the surface of the human body in rest and in motion. In my new laboratory I hope to have x-ray installation."

Professor Luigi, University of Pavia, Italy, writes, "What is requested in the questionnaire, under the numbers V, VI, VII, VIII and IX is really taught here to the students in medicine, not in the course in human anatomy but in the course of special preparation to the clinics, called semeiology. In such a course the student is prepared to examine the living human body, either in health or in disease, and is taught the method of applying all the knowledge he first learned during the course of study in anatomy and physiology, which lasted 3 years for anatomy and 2 years for physiology. The courses in semeiology are given 3 times a week during the course of one year. We have the following subdivisions: (1) A course in medical semeiology. (2) A course in surgical semeiology, in which is precisely taught what is requested under the numbers V, VIII and IX. (3) A course in neurological semeiology, in which is taught what is requested under the numbers VI and VII. We have also a special course in radiology in which the student is obliged to assist before entering the clinics. In such a course the student is prepared to use the radiographic apparatus, to make fluoroscopic examinations, and to interpret accurately the radiograms under II."

The medical student who has cut apart the poor dead relics of a once living individual by dissection, and whose knowledge of anatomy extends no farther, is not unlike the purposeless tinker who pulled apart all the pieces of a watch, but failed to assemble them in a running condition and has suddenly been requested to tell the time of the day by his watch. In order to learn anatomy, one must dissect. But, if the object be other than the pure morphology or architecture, thereof, dissection is only one means to an end. That end is to know the assembled living body with working coordinating parts for clinical use. The clinician must do his share by not ex-

pecting too much of the student and by continuing and advancing this knowledge of the living with his students. The students, however, should start their study of the living in their first year, thereby being prepared to meet the clinician who is in the land of the living and not concerned, except as a means to an end, with the dead.

There is as much difference between dead-house and living anatomy for clinical use as there is between theory and practice. The location of the muscles may be gained by dissection but only by practice on the living does the realization dawn on the student and usable knowledge gained as to muscle action and nerve innervation.

It requires considerable practice on the part of the student to overcome the natural handicap that the skin presents to the senses of sight, touch and hearing. But patience and perseverance and repeated practice in observations of the living subject will overcome this omnipresent obstacle. In the same manner, the virtuoso of the piano is developed in the use of sight, sound and touch by first mastering the rudiments of the technic of the five finger exercises, octaves, fifths, thirds, major and minor scales and various technics, such as the Czerny Studies. Finally, after years of practice, he may master the technic of Liszt's Hungarian Rhapsody No. 2 and render it in an artful manner. The clinical virtuoso must develop by using at once these same methods as are used by the musician.

The object of the director of any anatomical department should be not only the inculcation of one scientific viewpoint developed by dissection and the microscope but should also be the inspiration to the medical students to develop the investigative spirit in the "art of anatomy" which is gained only by repeated efforts, practice, training on the normal living human body with all available means. The material is always present in the class room when the students are assembled, and there is no need for an elaborate outlay outside of roentgen equipment. The students supply the simple equipment needed which is of use in later life. Part of the work may be carried on in the histologic laboratory where electricity is readily available for the study of the orifices by reflected light.

Then, by subsequent years of continuous practice on the living body, first started in the anatomical department, the medical student may hope to have that usable knowledge of anatomy at the bedside of the sick because of the penetrable character of his senses of sight, touch and hearing. When this time comes to pass, then and then only, will anatomy instructors be doing full justice to their part in the education of prospective doctors to the practice of medicine

rather than only to the purely static science of descriptive morphology. Otherwise, the department of anatomy may continue to be so pure that it is barren and sterile as the desert dust, as far as correlating the work of the medical student is concerned. Every anatomist teaching medical students may acquire this viewpoint and be a help to students, if he has the will, without sacrificing his scientific methods, of the art of anatomy by practise on the normal living subject.

#### CONCLUSIONS

1. In my opinion, gained by teaching gross human anatomy for 13 years, and by the opinion of a fair majority of the anatomists of the world, received through the questionnaires, living anatomy of the normal human is practically a neglected subject in many medical schools.

2. Because of the importance to the doctor in estimating the degree of health of the normal human body in periodic health examinations of the apparently well individual, more insistence should be made, than there is manifested at the present time, that a medical student possess a knowledge of the living structure in action as well as a knowledge of the dead in quiescence.

3. This knowledge of the living should begin to be inculcated during the course of dissection of the first year and continued through the second one. The responsibility under the present arrangement of the curriculum then rests with the clinician during the third and fourth years, to carry on what was started during the first and second years by the basic science teachers.

4. Since the clinician is concerned with the activity of the living rather than the inactivity of the dead, except as a means to an end, I believe the medical student will be better prepared to meet the problems of the clinic by a study of living anatomy than he would be without such experience.

#### AUTHORITIES

##### UNITED STATES

The questionnaire was answered by the following anatomists: HENRY McE. KNOWER, Medical Department University of Alabama; D. A. RHINEHART, University of Arkansas School of Medicine; L. C. KELLOGG, College of Medical Evangelists; A. W. MEYER, Stanford University School of Medicine; H. M. EVANS, University of California Medical School; ROBT. O. MOODY, University of California Medical School; I. E. WALLIN, University of Colorado College of Medicine; H. B. FERRIS, Yale University School of Medicine; HOMER BLINCOE, Emory University School of Medicine; R. M. STRONG, Loyola University School of Medicine; WM. F. WINDLE, Northwestern University Medical School; B. C. H. HARVEY and CHARLES H. SWIFT, University of Chicago (Rush Medical College); V. E. EMMEL, University of Illinois College of Medicine; BURTON D. MYERS, University of Indiana School of Medi-



cine; H. J. PRENTISS, University of Iowa, College of Medicine; H. B. LATIMER, University of Kansas School of Medicine; J. W. PRYOR, University of Kentucky; IRVING HARDESTY, Tulane University of Louisiana, School of Medicine; ERNST HUBER and G. L. STREETER, Johns Hopkins University Medical School; A. S. BEGG, Boston University School of Medicine; J. L. BREMER, Harvard Medical School; GEORGE F. SYKES, Tufts College Medical School; C. F. McCLINTIC, Detroit College of Medicine and Surgery; C. M. JACKSON, University of Minnesota Medical School; LOUIS B. WILSON, The Mayo Foundation, University of Minnesota; P. L. MULL, University of Mississippi School of Medicine; EDGAR ALLEN, University of Missouri, School of Medicine; R. J. TERRY, Washington University School of Medicine; V. P. BLAIR, Washington University School of Medicine; H. von W. SCHULTE, Creighton University School of Medicine; CHAS. W. M. POYNTER, University of Nebraska; C. F. W. McCLURE, Princeton University; W. M. BALDWIN, Albany Medical College; WAYNE J. ATWELL, University of Buffalo Medical Department; C. R. STOCKARD, Cornell University Medical School; H. D. SENIOR, New York University and Bellevue Hospital Medical School; GEORGE W. CORNER, University of Rochester School of Medicine; H. E. FRENCH, University of North Dakota School of Medicine; O. V. BATSON, University of Cincinnati College of Medicine; T. WINGATE TODD, Medical Department, Western Reserve University; J. C. STEPHENSON, University of Oklahoma School of Medicine; O. LARSELL, University of Oregon Medical School; J. PARSONS SCHAEFFER, Jefferson Medical College; JOHN B. ROXLEY, Temple University, School of Medicine; DAVENPORT HOOKER, University of Pittsburgh School of Medicine; MARY BICKINGS THORNTON, Woman's Medical College of Pennsylvania; M. J. GREENMAN, The Wistar Institute of Anatomy and Biology; W. F. R. PHILLIPS, Medical College of South Carolina; G. R. ALBERTSON, University of South Dakota College of Medicine; A. H. WITTENBORG, University of Tennessee College of Medicine; V. G. TOLBERT, Meharry Medical College; R. S. CUNNINGHAM, Vanderbilt University School of Medicine; F. H. SWETT, Vanderbilt University School of Medicine; GEORGE M. CURTIS, Vanderbilt University School of Medicine (1914 to 1920); W. W. LOONEY, Baylor University College of Medicine; WILLIAM KEILLER, University of Texas Medical School; B. I. BURNS, University of Utah School of Medicine; H. L. OSTERUD, Medical College of Virginia; R. B. BEAN, University of Virginia Department of Medicine; S. J. MORRIS, West Virginia University School of Medicine; C. R. BARDEEN, University of Wisconsin Medical School.

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## DISCUSSION

## On Papers of Drs. Grant and Carey

DR. S. WHITNALL, McGill University Faculty of Medicine: To open this discussion, I beg to offer a few remarks on the teacher, the student and the methods of human anatomy.

I. In the first place, I maintain that the teacher must hold a medical qualification. I fail to see how otherwise he can fulfill efficiently what in a medical school is certainly his prime reason for being there, namely, to guide the future doctor as to how he may best acquire a practical knowledge of the human body; a knowledge of the origin and termination, the arrangement and derangement, the health and ill health, of which is to be his professed service to the expectant public. The teacher, therefore, should keep his former clinical knowledge up to date, so far as the broad advances, tendencies, and more outstanding features of its progress are concerned, and adapt his course accordingly. I would not go so far as one of the greatest living anatomists, Sir Arthur Keith, who advocated that such knowledge be kept so fresh as to enable the teacher at any time to go into general practice. I would not have him devote so much time to this collateral interest as to consider himself merely a "grass physician."

Next, I submit that the teacher should have a further qualification, namely, to be able to present the subject to the student in such manner as to give it an educational value in itself. Interest should be aroused to seek explanations of the why and wherefore of normal structures, to visualize the consequences of malformations and maladjustments; the priceless habits of independent observation and deduction, which, for the student's purpose, cannot better or more appropriately be studied elsewhere than in the dissecting room, should be inculcated; and the correlation between form and function ever be pronounced. As Dr. Grant has so admirably illustrated, the student thus does not have to "learn" anatomy, any more than he has to learn a railway guide or dictionary; but he does learn how to apply principles and utilize his knowledge, which are matters of inestimable importance as foundation for his future clinical work.

The teacher of today has to recast his whole attitude toward and presentation of his subject in trying to meet the constricting requirements of an ever more crowded curriculum. He is asked to justify the amount of time he demands, and he can best do this not so much by emphasizing the time consuming labor of actual dissection and the need for anatomy to be absorbed slowly and repeatedly if even a bare knowledge of it is to be held, but by endeavoring to express the educational value of the work as above indicated.

Why is it that some of the most brilliant minds in the profession of medicine have been bored by anatomy, and turn from it with contempt? Their interest has not been stimulated and maintained; the tediousness of dissection and the labour of memorizing a catalogue of new names, has been allowed to become sheer drudgery, and they finally agree that anatomy should slightly be called the "handmaid of surgery!"

I think that to attain his prime object, the teacher should boldly call himself a human anatomist instead of appearing to be ashamed of the title, by preferring the style of neurologist, histologist, zoologist, biologist, anthropologist, craniologist, rather than the original designation. As Professor Elliot Smith recently wrote: "In some famous medical schools it is considered almost an offense on the part of an anatomist to devote himself to the essential business of his subject, and work at real anatomy." I have even heard the anatomist contemptuously called an "anthropotomist."

The cause is, I presume, that the anatomist has been so long accursed by tradition that he is still overwhelmed by the burden, and failing to rise above it is trying to creep out at the sides under these disguises. Let me quote authority again: "The anatomist of the present day has retained in his teaching an undue amount of medieval method and material that has no justification either on the ground of its practical or scientific value. In paying respect to these antiquated conventions—what earlier bookmen wrote rather than what the body itself reveals—he has neglected the great opportunity of bringing the subject of anatomy into closer correlation with the needs of the times. The possibilities for great achievement in anatomy were never so great as they are today."

As an example of tradition, let me introduce the question of *how much* anatomy we should teach today, apart from in what manner. For purely practical purposes, we might ask a symposium of experienced surgeons, physicians, gynecologists and specialists to confer, and communicate the sum of their deliberations to us who first have to guide the young men. Would they do it? I doubt it. I think that for however long they foregathered, the result would be an indeterminate wrangle over their own particular requirements. I submit that the ordinary general practitioner, who will be the largest member of our ultimate product, needs to know not a great deal of matter but a lot of principle. He must know the main facts well, but can neglect much of the details. As a specialist, he can obtain his more particular knowledge by postgraduate study. At least, we have got away in most schools from the wearisome systematic courses of lectures, pressed, no doubt, by the reduction of time allowed for anatomy.

How much *do* we teach? Tradition again has framed our program on one book, better known, better written, better illustrated than all others, *Cunningham's Practical Manual*. In the lucid, leisurely, exposition of its earlier forms, it came as a boon and a blessing to certainly most of our English-speaking present generation of doctors; but, alas, the exigencies of repeated editions and desire for something fresh in them, have led to the incorporation of new detail, until its present swollen form cannot be digested by even the most robust and energetic student in the wholly inadequate time now left him for its study. The tradition remains as a guide to followers but the last edition sets the standard instead of the first. Have the clinicians demanded the change? Their complaint so often is that the student has forgotten the rudiments.

Further, the traditional anatomist even twenty years ago was largely obsessed by pure descriptive anatomy of the human body. His sole business was to give an accurate but dead and uninspiring description of structure. He has now revolted against that tradition, or awakened from its nightmare. Is it possible that he was aroused by an uneasy suspicion that his colleagues were maliciously whispering behind his back that he was not a true scientist but merely an artist?

He may further have become alarmed at the suggestion that, at any rate, his was a narrow and exhausted field of science, and that he would be engaged more profitably in less explored aspects of morphology—hence, the alternate list of titles he prefers, that I have mentioned. My criticism is that now he so often goes to the opposite extreme and neglects entirely pure human anatomy for teaching and educational purposes.

I pray you, do not think that I am overlooking the secondary reason for his existence, namely, the interest to himself, the renown of his school, and the advancement of his subject by research, that resounding, self-satisfying and loudly acclaimed word; but this, too, may be carried to an extreme to the detriment of practical teaching.

I submit, then, the following points as regards the teacher: (1.) He should be medically qualified. (2.) He should be personally qualified by his interest in human anatomy; and be neither dogged by tradition nor hampered by standardization. (3.) He should maintain and apply the educational value of his subject; teaching the principles in lectures, and leaving most of the facts to be studied in the dissecting room. (4.) He should engage in research, but not to the neglect of his students' primary requirements.

II. As to the student, I think that he would not feel so submerged in the chaos of fact and so bewildered by a new nomenclature, if he had a better retention of such classics as he learned at school, especially Latin; also that a better understanding of why he had to study zoology in his preliminary years would avoid our having to go over much of the ground again.

III. Regarding the methods of teaching human anatomy, I hold that every medical school should have its own, and be allowed free expression of the individuality and personality of its teachers, unhampered by supervision, and, above all, uncramped by standardization. I grant that this new process has its uses, but they are not so far reaching as is the damage inflicted by its logical and inevitable outcome. I would rather be influenced by that tradition which I have criticized; it, at least, has points that have stood the test of time.

Overstressed standardization stultifies initiative, chills imagination, extinguishes inspiration, dampens enthusiasm, and crushes originality. It gives no credit to the highest expression of the teacher's art, but only "credits" to the student's hours of mechanical academic occupation, and, possibly, relief to the mathematical genius who engages in the intricate jig-saw puzzles of time tables.

I think that a discussion of methods, of such topics as time, hours, lectures, courses, examinations and such minor administrative technic, more

properly belongs to a meeting of anatomists, pure and simple, and would be but time consuming and tedious here. I would only say that I am against the system of separate specified courses, such as cross-sectional anatomy, surface anatomy, applied anatomy, roentgen-ray anatomy, and so forth. These should all be incorporated in the general course, part and parcel of the method of study of any region of the body that they can appropriately be applied to. Enumerated in the calendar they make an impressive show, but their segregation for study is apt to lead the student to overlook one or other of them in his proper systematic consideration of a region in his clinical work.

DR. JOHN BEATTIE, McGill University Faculty of Medicine:

I do not think that one is justified in discussing details of teaching methods at this stage. These depend so much on the personality of the teacher, the type of student and the equipment of the school that a common basis is hard to find. Instead I think one ought to look behind these things to the less tangible but still very real question of the ideals and outlooks of the schools of anatomy in British speaking countries.

It is possible, I think, to divide these into three definite groups: (1) The old British school; (2) the American school, and (3) the Modernist school.

The old British schools are characterized by the insistence on a detailed knowledge of the intimate structure of the whole human body. Teaching is carried out by didactic lectures on all the systems, bone classes *ad nauseam* and minute dissection. This was "descriptive anatomy."

The American school drew its inspiration from Franklin P. Mall. It has gone to the other extreme. Lectures are eliminated to a greater or less extent, the time for anatomy is cut down more and more, until now in some schools the amount of facts to be absorbed in the short time available is beyond the mental capacity of nearly 70 per cent of the students. With this reaction to the old descriptive method, research has followed in the wake of teaching methods. *Homo sapiens* has lost his supremacy. In his place reigns the albino rat. Facts are being amassed by this school at an ever increasing rate. With this intense zeal for the collection of facts, there is a singular lack on the part of most investigators of any real attempt to discover their meaning.

The third school—the Modernist—is rapidly growing in Great Britain. It grew round the association of two great men—Elliot Smith and Ernest Starling. In that school there is an attempt to get back to real anatomy—that of John Hunter and William Harvey.

The ideals are not structure alone or function alone, but structure interpreted in terms of function. Anatomy, while not abandoning the only possible method of learning the geography of the human frame, is learning the value of direct research. Roentgen-ray work, clinical observations, like those of Henry Head on the nervous system, are changing the age-old formulae of textbook anatomy.

"The continual teaching of the dry facts to students, the restriction of teaching to the limits of the finite subject—human anatomy—develops insidi-

ously in the teacher an intellectual complacency, a feeling that one is master of one's subject. Nothing so easily destroys a man's capacity for thought and his delight in indulging it as the restriction of his mental efforts to a limited part of a subject now hardly capable of extension." I quote the words of Sir Berkeley Moynihan.

Such is a legitimate criticism of the older school of British anatomy. The modernist school has taken the best of the old British tradition and is now building up a school of true anatomy—a study of the purposes of structure, i.e., the principles of anatomy. In other words, we are going back to the school of Harvey and Hunter, looking for final causes and trying to answer the question—To what end?

We may be criticized by physiologists that we are invading their province. Nothing is further from the truth. Anatomy can only be taught by the joint assistance of the clinician, the physiologist and the anatomist. Research work in anatomy must be a direct attack to the many problems facing us now, problems demanding aid from all three. The anatomist must be able to appreciate clinical work and to draw inspiration from it, the physiologist must think not in terms of dog and cat physiology but in terms of human function. The clinician must learn the experimental method and the value of morphology and physiology. The new school of anatomy is then experimental in outlook, in contact with clinical problems and scorns not to use the results of such association in the teaching of the real living anatomy.

If that is the ideal of teaching in the modernist school, the methods must follow that ideal. Anatomy and physiology must be taught synchronously. Longer time must be given for both. It is essential to give two whole academic years to the teaching of these two subjects. There is laid during this time a good foundation for future clinical work. The time is not wasted. The student is gaining the clinical outlook, i.e., a training in observation. Anatomy, then, will not stop at the dissecting room door or physiology at the door of the laboratory. The details of structure will not be memorized parrot-like, but fixed in the mind by an association with the facts of function and clinical observation.

Starling once said, "The time spent at anatomy lectures and at physiology lectures is wasted unless both teachers approach the subject at the same time." The relations of the kidney—once so important—are of little value compared with the appreciation of the structure of the kidney in relation to the renal secretion. This coordination of effort—this unity of outlook—is the keynote of the new spirit in the new British school of anatomy.

Dr. A. PRIMROSE, University of Toronto Faculty of Medicine: I stand here with the experience behind me of having been in charge of the anatomical department of the University of Toronto for a good many years, prior to my having degenerated into a surgeon! I have listened to the papers this morning with very great interest. I agree with Dr. Whitnall regarding standardization. I would hope that one feature of this particular meeting would be to emphasize the fact that we have passed the stage when standardization is of value. We must, in order to get proper perspective, ac-

knowledge that standardization in America has had its value. It was necessary some years ago to set up certain standards, and as a result of setting up these standards, a large number of inefficient schools were eliminated.

Now, I take it, that we have arrived at a stage when it is important for each school to develop its own standards and its own methods of teaching. The curriculum should not be rigidly laid down to a fixed standard of hours, methods of instruction, didactic lectures, and so on, but each faculty of medicine should be permitted to exercise its own judgment and each individual teacher within the faculty, should be left very free scope to establish his own standards provided he is the proper teacher capable of developing his own method of teaching in an effective and efficient manner.

I had hoped that this meeting would perhaps emphasize that. I find in corresponding with a great many of my colleagues in the United States that they agree with me. A recent communication from a man very much interested in medical education told me he thoroughly agreed to that and believed in the United States the idea of abolishing uniform standards was becoming more or less universal.

Referring to the very interesting talk of Dr. Grant has given us on methods of teaching anatomy, I would like to make one suggestion, that these diagrams which he produces should be produced and built up before the student, with colored chalk, at the moment. I think that is of the greatest possible value. Even a splendid, finished diagram of artistic merit is of little service to the average student. He looks at it as a thing of beauty but fails to remember the anatomical relations which have been pointed out to him and which it illustrates. It does not teach him much. I should like to illustrate what I mean. Take for example the diaphragm and construct your diagram before the class. You can sketch the vertebrae bodies very rapidly and then with a broad red stroke show where the aorta is. Then it is quite easy to indicate the relation of the diaphragm to the aorta, showing how the interlacing of the tendinous parts of the crura form an osteofibrous canal. You can then show the central tendon of the diaphragm and the muscular portion about it and you can demonstrate that, at the ninth dorsal vertebra, the vena cava inferior perforates the central tendon, while on the left side, opposite the tenth dorsal vertebra, the esophagus perforates the muscular portion. You can now fix these facts in the student's mind by showing them that the osteofibrous canal protects the aorta: the vena cava passing through the tendinous part is protected from pressure when the diaphragm contracts, the contraction would pull on the tendinous part and tend to enlarge the opening if anything, on the other hand the esophagus passing, as it does, through the muscular portion would be closed when the diaphragm contracts and thus stomach contents would be prevented from regurgitating back from the stomach with the gullet.

You can reproduce such a diagram while you are talking. I think every teacher of anatomy should certainly master some method of reproducing a diagram and building it up before the class. I believe the construction of such diagrams before the class is of very great educational value and much more useful than the finished diagram or the lantern slide.

## Extramural Clinical Teaching\*

### I

#### THE PRECEPTOR SYSTEM AT WISCONSIN

C. R. BARDEEN

Dean and Professor of Anatomy, University of Wisconsin  
Medical School, Madison

The preceptor system in medical education is based upon the idea that medicine is an art as well as a science.

A science deals essentially with abstract conceptions of phenomena. Concrete phenomena are observed from the point of view of abstract relations to other phenomena. Thus in the study of gross human anatomy, the most concrete of the medical sciences, the student is encouraged to look upon the body as composed of various systems of organs and to visualize each of these systems of organs as an abstract conception. The concrete body which the student dissects never perfectly illustrates the abstract conceptions of the organ systems given in the text book. Some of the deviations seen are ascribed to imperfections of generalization by the writer of the text-book or to imperfections of methods of dissection on the part of the student, other deviations are ascribed to normal or abnormal variability, which in turn are abstract conceptions.

An art on the other hand consists of the application of abstract conceptions to meet concrete conditions. In the practice of medicine abstract conceptions guide the physician in his endeavors to relieve a given patient at a given time and place. In primitive conditions the abstract conception governing the physician or medicine man is that of demonic possession. Today the abstract conceptions in the main are based more or less directly upon the generalizations of physical science although to some extent the psychoanalyst has taken the place of the medicine man. Whatever be the abstract conceptions which guide his conduct, the physician is called upon to meet a concrete situation.

The progress made in the prevention and treatment of disease through the application of the principles and methods of physical science gives ample proof of the importance of science as the proper basis for the art of medicine. The Medical School is called upon to acquaint the student with scientific generalizations and with the methods whereby these generalizations are reached. It is called upon further to play a part in the advancement of abstract conceptions of

\*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.



disease, scientific research. The primary concern of the modern scientific medical school is the advancement and imparting of scientific knowledge. The teachers in the basal sciences have no other essential duties.

The teachers in the clinical branches have in addition to these duties the duty of applying scientific knowledge to the treatment of patients and the duty of teaching students how to do this. They are called upon to be at once scientists and artists and teachers of science and art, and may in addition be entrusted with considerable administrative duties. While the welfare of the patients in a teaching hospital attached to a medical school demands the practice of medicine as an art, the responsibility for drilling students in sound principles upon which to base the practice of medicine and the responsibility for advancing medical knowledge tend to emphasize the abstract side of medicine, or medicine as a science, rather than the concrete side, or medicine as an art. This tendency is still further strengthened by the presence of patients and students in such numbers as to make it difficult to treat either patients or students as individuals with concrete complex personal surroundings. There is always the tendency to use patients as cases to illustrate principles even where a certain number of patients are assigned to a student for history taking and follow-up work.

An art, the skillful application of principles to produce concrete results, is as a rule learned by following the example of a master until facility is acquired. When the fine arts were at their height, talented young men served years of apprenticeship with master artists. In the field of medicine today, those who prepare seriously for scientific research or for the practice of a specialty as a rule serve somewhat similar apprenticeships, although these are usually begun later in life. But in the training now offered students for general practice little opportunity is offered the average student for close association with skillful practitioners even for limited periods. The intern year now required for graduation by many schools does not take the place of such an association. The intern is attached to an institution not to an individual, he may observe examples of skillful institutional medical practice, but he does not as a rule enjoy the advantage of close personal association with an individual physician and through such association learn the art of medicine in an intimate way.

The apprenticeship system as we are endeavoring to develop it at the University of Wisconsin is designed primarily to give the average undergraduate student an opportunity to learn something



of medicine as an art through close association with a series of preceptors selected because of their skill in applying the science of medicine in daily practice. By assigning not more than one or two students to a given preceptor at a given time, an opportunity is offered for close personal relations not possible under the usual conditions which prevail in medical schools.

The methods whereby relationships of master and apprentice can be approximated in the undergraduate study of medicine in a given school depend upon surrounding conditions. Since the surrounding conditions of no two schools are quite alike the most satisfactory way of attaining the end sought is likely to differ from school to school. I shall treat here briefly merely of the special conditions at the University of Wisconsin and of the methods which we are endeavoring to use there to give the undergraduate some training in the art of medicine.

At the University of Wisconsin the medical school enjoys both physically and socially unusually close relations with the other University departments, especially with those devoted to the sciences both "pure" and as applied to agriculture. Faculty and students have abundant opportunity to develop medicine as a science. The Medical School plant embraces a state general hospital to which patients are sent from all over the state. This 350 bed hospital was located at the University to provide opportunity there for teaching and research and to provide scientific facilities for the treatment of patients who otherwise might be without proper facilities for obtaining such care. Madison, in which the University is located, is a city of between fifty and sixty thousand inhabitants. In addition to the Wisconsin General Hospital there are located in the city three other modern hospitals, each with 125 or more beds. Nearby there is located a large state hospital for the care of the acute insane. Madison, while a relatively small city, is thus already a well established hospital center.

In Wisconsin, Milwaukee is the only large city. The Medical School of Marquette University is located there. Many of the other cities of the state have developed hospital centers. As a rule in these other cities, although this has not as yet to any extent been the case in Milwaukee, there has been a tendency toward the formation of group practice, and where this has been the case the group has tended to dominate even where it does not control the hospital to which the members of the group send patients for hospital care. This tendency has reached its fullest development at some of our preceptor centers. A brief description of these conditions where fully devel-

oped will illustrate the present trend of practice in cities of the state outside of Milwaukee.

In such cities, usually of less than 25,000 inhabitants situated at railroad centers, physicians form a "Clinic" under the leadership of a broad-minded, experienced, energetic physician. This group of physicians may erect a beautiful office building or "Clinic" in which in addition to offices for the members of the staff are excellent laboratories for histological, bacteriological, chemical, and radiographical work and a really good medical library. Encouragement is given to scientific research, and work of value along these lines is carried on there. Hospital care of patients is provided in a well equipped hospital of 150 to 200 beds, usually conducted by a Sisterhood. The clinic group constitutes the medical staff of the hospital.

The members of the clinic group specialize in the various fields of medical practice, but this specialization has not been carried to an extreme degree. Most of the members of the group are thoroughly familiar with general practice. Most of the general practice of the community is carried on by members of the group. The members of the group serve as consultants and as specialists to whom patients are referred from the surrounding territory. The reputation of the Clinic naturally also attracts patients from more distant regions.

We have here an active clinical center. While at such a center the art of medicine naturally receives the chief attention, scientific research is not neglected. It is recognized that progress in the art necessitates keeping up with progress in the science of medicine. The members of the group make frequent visits to the chief centers for the advancement of medical science, including trips to Europe.

Members of a clinical group of this character find clinical teaching stimulating. A few students assigned to such a group for a given period have an opportunity for closer personal supervision and closer personal relations than is ordinarily possible at the teaching hospital of a medical school and greater opportunity to acquire an intimate acquaintance with the conditions of private practice. In organizing the work, one of the members of the group is appointed preceptor in chief, the others serve as associate preceptors. The work of the student is so arranged that he serves with different members of the group at different periods but under the supervision of not as a rule more than two preceptors for a given period. The student acts as an extern on the hospital service of his preceptors, has patients assigned to him for history taking, physical diagnosis and laboratory study at the clinic and is given some opportunity to visit patients at their homes and learn of the conditions of family practice.

The clinical part of the medical course at the University of Wisconsin was begun in the fall of 1925, and the first class was graduated in June, 1927. In arranging for the clinical part of the course regular didactic class work was confined to the third year leaving the fourth year free for assigning students in very small groups to various practical services, extramural and intramural. Furthermore an endeavor was made to conduct the practical work of the third year so far as possible in the wards of the hospital and to make the didactic work essentially a single course in medicine in the broad sense of the word rather than as a series of isolated specialties. Thus for instance diseases of the kidneys were taken up from the standpoint of internal medicine, surgery and urology by members of the departments working in conjunction instead of each department treating this subject independently.

The fourth year of the medical course was begun July 1, 1926, and the students were assigned to 48 weeks of practical work preceding graduation the following June. The work of the year was divided into four periods of three months each and the class, purposely limited to twenty-five students because of the newness of the work, was divided into four sections, with six students in three sections and seven students in one section. One group of students was assigned for work in the surgical division of the Wisconsin General Hospital and one group to work in the medical division. At the end of each quarter other groups were assigned to each of these services. In the course of the year therefore each quarter of the class served for a period of three months on the service of the medical and for a period of three months on the service of the surgical division of the hospital. While on these services the six or seven students were assigned for different periods to different fields of work. These assignments included three weeks in pediatrics at the Children's Hospital and in dermatology at a private clinic and at the county dispensary in Milwaukee, and three weeks at the State Hospital for the Insane at Mendota.

Of the other two quarters of the year's service, one was spent partly in elective work, partly on special services such as a three weeks' obstetrical service in Chicago, made possible by the courtesy of Dr. DeLee, and other shorter services made possible by the courtesy of Dean Cutter of Northwestern University, and partly in field study of public health work.

The remaining quarter of the year's work was spent on extra services similar to the one outlined above. Clinical centers at Marshfield, La Crosse, Eau Claire, Wausau, Oshkosh, and Ashland, were

thus utilized through the courtesy of groups of clinicians and of the hospitals in which these men work. From one to three students at a time were sent to a given center. The clinical groups taking part in the teaching at the various centers differed considerably in closeness of organization. In some instances the organization did not extend beyond a loose association for cooperation in teaching.

Students were assigned to these extern services during the second half of the fourth year. Each center taking part in the work thus received two successive students or groups of students between January 1st and the end of the year.

The work at all of the centers was successful from the point of view of both preceptors and students. While on this service each student was required to write up a series of careful case reports which were sent in to the office of the medical school. In addition at the end of the service each student furnished a written report describing the nature of the service, telling the main benefits derived and making suggestions as to possible improvements.

Oral examinations given each fourth year student at the end of the year by examinory committees composed of instructors from both the laboratory and clinical departments offered further opportunity to observe the effects of the preceptor services on the students as well as to check up on the effectiveness of our medical course along various lines.

During the year each clinical center in which extramural teaching was carried on was visited several times by members of the faculty of the medical school. At the beginning of this work the preceptors in charge were invited to Madison for a conference. In addition many of the preceptors visited the University during the year to give lectures before faculty and students.

The success of the preceptorships last year has led us to continue the work at the same centers and along similar lines during the present year and to plan to develop it more extensively in the future by making use of a greater number of clinical centers and by extending the preceptorships throughout the year.

At present we plan next year again to divide the year into four divisions of three months' service each and to divide the class into four sections. If this plan is carried out, each section of the class will spend six months in intramural work and six months in extramural work, the latter being divided between two different clinical centers.

We believe the system of teaching here outlined will do much not only to bring the student into touch with the active practice of scien-

tific medicine, but also to stimulate the practice of scientific medicine in the state. The preceptors in charge of the work have all been men of high standing in the profession from the standpoint of the science as well as the art of medicine. While the associate preceptors have in general been men of exceptional standing in the profession, there has occasionally been one who has illustrated how not to practice the art of medicine. The students have been quick to recognize such men and to learn the lesson they are best fitted to teach. The student is broadened by the comparisons which his contacts with men at various centers enable him to make.

There is in the community no other group of men who on the whole are such active life-long students as are the members of the medical profession, no other group so well fitted to train successors. Advantage should be taken of this to enroll as many as possible of those especially fitted by ability, training and surroundings to play an active part in preparing the coming generation of physicians for practice.

## II

### THE PRECEPTOR SYSTEM AT MICHIGAN

HUGH CABOT

Dean and Professor of Surgery, University of Michigan Medical School,  
Ann Arbor, Mich.

A very small experiment with the preceptor system has been undertaken at Michigan with a somewhat different point of view from that just discussed by Dean Bardeen. The real purpose which lead us to make this beginning in the preceptor system was an attempt to show the student before the beginning of his fourth year, what was the nature of this general practice of medicine of which we talked, as I think, rather loosely.

We are in the habit of saying that we have prepared our students for the general practice of medicine, but, in the school at least, it is very doubtful whether any of the students have the slightest idea of what it is all about. What do we mean by "the general practice of medicine?" As far as they have any idea, it is generally based on their memory of what their own family physician practiced ten or fifteen years before.

But, the general practice of medicine has changed very much in the last generation. I have no doubt it is changing more rapidly today than at any previous time, and I suspect it is desirable to show the student during his course and, perhaps, before the beginning of his last year, what the field of the practice of medicine really is.

Another purpose which we had in mind was to make the student come to his fourth year with a somewhat more critical attitude, a little bit less willing to submit to a passive process of spoon feeding wherever he could find anybody who was willing to wield the spoon, to take a little more critical view of the teaching or opportunities for learning which he gets in the fourth year.

There appeared to be no time that we could properly take from the various allotments made in the third and before the fourth year, so that this experiment was made entirely a voluntary one during the summer intervening between the third and fourth year. We selected from the state of Michigan a group of men in general practice and outside of considerable centers of population. We avoided any city of considerable size though we were tempted on one or two occasions to send students to men in practice in the larger centers because they seemed to be really engaged in the general practice. The men selected were all men in relatively small centers so that the students would get a view of what constituted the general practice of medicine into which we are urging them to go.

They were sent to their preceptors for a period of two months, beginning July 1, so that it allowed them ample time for a summer vacation, the present long vacation appearing to us likely to die, and, if we can assist in killing it, we should like to do so. As I said, this year the matter was entirely voluntary, because we have no machinery for compelling the use of the summer vacation and we had no very clear idea as to the probable success of the experiment.

I do not think we are yet in a position to draw any conclusions because it was only carried on with ten students, a pretty small proportion of our class, but so far as one can see, the experiment has been interesting and I think important.

Letters from all the physicians who had students are uniformly satisfactory. All of them say that they were glad to have the student, that they found the student stimulating and that they believe that the student obtained benefit. All the students were pleased and wagged their tails when they came home, and, on the whole, showed the outward and visible evidence of having been both stimulated and benefited.

I have communications from all the students. I have in my hand one that was written not to me but to the preceptor, and I will read two or three sentences which are interesting. This was from a student somewhat below the middle of the class in scholastic standing, the group which I should like most to stimulate in this way and which I think most needs stimulation.

He says, "Just a line to express my appreciation of the best two months I have ever experienced in the field of medicine from the student point of view; in fact, my respect for the practice of medicine has increased 500 per cent since last June, all of which is due to my association with you."

I should be flattered if I were his preceptor. He is writing in October, and he continues:

"The year is well started and I am studying with a new spirit because I found out this summer how much practical work I didn't know."

That is rather a new one to me. I should have supposed that the student knew he did not know anything about the practice of medicine. Here is a gentleman who evidently assumed he knew a good deal about it and was staggered to find he was not quite a finished artist. It constitutes, I think, interesting evidence that we can by this method stimulate students.

You will note that what we have undertaken to do is from a somewhat different line of approach from that which Dr. Bardeen has used. We have not been able to make it a fixed part of the curriculum, but I see no reason why it should not be made so, put in not as an elective, but as required, as we gradually increase the number of men to whom we feel prepared to apprentice our students. It will with us require a large number of preceptors.

We confined ourselves strictly to men in general practice in a relatively rural field, because I was interested to know whether that would produce certain reactions in which I was interested, but I see no reason why a combination with the work in the group clinics which are developing certainly very rapidly throughout the middle-west, should not be also used, and I suspect that pushing these students out into contact with the practice of medicine—and I think, perhaps, earlier than the fourth year—is likely to make our fourth year teaching more effective.

### III

#### A MODIFICATION OF THE PRECEPTOR SYSTEM

L. S. SCHMITT

Associate Dean, University of California Medical School, San Francisco

I will tell you of an experiment that has been carried out in our medical school along the lines of what is called extramural teaching.

Extramural teaching has been known to medical schools and to other parts of universities, such as engineering departments, for



many years. Perhaps, what we might call the experiment at the University of California Medical School is a return to a modification of the preceptor period.

The work of the fixed curriculum is completed at the end of the first half of the fourth year. The last half of the fourth year is given over to a selection by the student of subjects of a varied nature; therefore, Dr. W. J. Kerr, Professor of Medicine, took the opportunity of extending this selection. Students were selected to carry on the experiment not entirely from the better students of the class, but more or less as a cross-section from the standpoint of scholastic attainment.

We then invited to come back to the school certain selected alumni, and asked them to present during a week's visit their views of the practice of medicine in their respective communities. From that group we selected some of our extramural teachers. Not all were selected, but of those who were selected, it was attempted to take those who had the experience and the practice in smaller communities, that is, with from 3,000 to 5,000 inhabitants. Following that, the students who were selected during this period were sent out for one month, or, in some instances, for two months, to these various communities and there they were placed in close contact with these practitioners.

After the first year, one or two localities were dropped from the list, principally on account of the location, or in some instances on account of the environment and the lack of teaching opportunities.

In the first year, four students were selected; in the second year, eight; in the third year, eight; and in the coming year we propose to take ten students and carefully place them.

When the students return at the end of the period, they are required to make out a diary, somewhat along the lines to which Dr. Chipman referred yesterday, but going over their entire experience. We also ask the preceptor to give us his opinion. In almost every instance it has been favorable. One student returned and said he had been dissuaded from attempting to go into general country practice.

One point that must be borne in mind is that in order to carry out this experiment under the best conditions, it must be limited to a selection of the general practitioner only. Obviously, specialists should not be taken into consideration.

As to the purpose of this experiment, it is two-fold. First, the alumnus obtains a stimulus from the student recently filled with all of the latest information and willing to demonstrate it. In the sec-

ond place, the student returns to the medical school with an idea of general practice, but better still, he returns with an idea of the patient.

For many years we have heard at these meetings of the autonomy of the department and of the autonomy of the teacher, and in this way we hope to bring to the student a point of view concerning the autonomy of the patient. In other words, we hope to bring humanity closer to the foreground of the picture.

#### IV

### THE CLINICAL CLERK SYSTEM AT NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

FRED C. ZAPFFE

Supervisor of Clinical Clerks, Chicago

Northwestern University Medical School, so far as I know, is the first medical school to appoint a supervisor of clinical clerks. I am that individual. There is no precedent to help me, so I am forced to work out a plan of my own which will probably be modified a great many times before it is as good as I want it to be.

The idea underlying the plan is for the supervisor to be in personal touch with every clinical clerk and every teacher all the time. The object is to train the individual student to observe and to think. It does not matter where the clinical clerk is placed, whether he happens to be working with an internist, or a surgeon or an orthopedist, or a neurologist, so long as he is given the teaching which he should have. He is a sort of apprentice, or a famulus. The cooperation given me by both teacher and student is far greater than one would expect, because old ideals—and idols, perhaps, are being smashed to bits.

The plan has been operating only about four months, but it is already giving promise of high achievement. It is by no means perfect—but it soon will be. The senior class is divided into three sections numbering forty students each. The sections rotate tri-monthly. One of these is known as the academic section, with which I have nothing whatever to do. They are taking what remains of the didactic work in the senior curriculum and attending section clinics. I trust that before long the senior year will be freed of all didactic work.

The remaining two sections of the senior class are clinical clerks. One section is the hospital group; the other is the dispensary group.

The hospital group is freed from all didactic work, with the exception of an hour or two in the afternoon after 4 o'clock. The students go to a hospital as early in the morning as the teacher to whom they are assigned wants them to report. They remain until at least 3 o'clock in the afternoon, giving them just time enough to report at the college for didactic work. They must report at the hospital Sundays or in the evening if the clinician wants them.

The dispensary group is free from other work from 9:30 a. m. until 4:30 p. m. and during those hours they attend the dispensary. The services of the dispensary are grouped and the clerks are also grouped. A schedule is made up on this basis so that each student knows where he is to go and when. The teachers are given a list of the students to guide them. Attendance records are kept by the social service worker assigned to each service or division. Students report "in" and "out."

The students in the hospital section are given the privilege of selection of assignment insofar as it fits in with the plan. They go either singly or in pairs.

I meet the hospital and dispensary sections at the beginning of the semester and tell them what are the duties of a clinical clerk. The teachers have previously been apprised of the plan so that when the students come to them they know what to do with them. The point stressed is that the student is not an interne, nor an externe, nor an orderly; he is a clinical clerk.

I have a record prepared for me by the office of each student's work in college during the preceding three years. I know not only his grade, but also the subject in which he excelled in scholarship in each of those three years, so that I feel I am fairly familiar with the student's record when he comes to me. I make use of that information when I make special assignments for clerks, and also when checking up on their clinical work.

I reserve the privilege of disregarding the student's choice of where he wants to go, for this reason: if one of the clinical teachers is doing some outstanding teaching in some one particular direction in which it would be an advantage to place a very good student, then I select that student. I put the plan before him and ask him whether he would like to take on the assignment. If he agrees—and he is given absolute choice, I communicate with the teacher, explain the situation to him, and he takes on the student. At every stage, the work of both student and teacher is observed. If I find a student who has not been getting along very well, I call him in,

and talk to him. I try to find out what his problem is. I try to get his "mental slant" on what he is trying to do, and why he is not getting on well. If necessary, I find a teacher who will interest himself in the boy, and make it his job to do something for the boy. I have had several interesting experiences with outstanding results in that direction.

These students are not permitted to attend amphitheatre clinics, or group clinics. Every teacher and his entire departmental staff devotes himself to the one or two students assigned to him for one, or two or three months, as the case may be.

Each student writes ten theses during his hospital service. These theses are based on patients assigned to them by the teacher. The thesis includes the history of the patient, the physical examination, such other examinations as may have to be made, and the student must make all the examinations, a complete discussion of that particular medical entity, with reference to its clinical history, diagnosis, prognosis and treatment, a bibliography and at least six abstracts of original articles bearing on his case.

I visit every student at the place of his assignment once a week, and I talk to him; find out how he is getting on; listen to his problems, if he has any; get his reaction to his work, and glance at his thesis, as far as he has gone. I make suggestions, refer him to bibliography which I think he should read.

Then I see the teacher and find out how the students are working. Sometimes I have had to change a student's assignment—and sometimes it has been necessary to have a conference with a teacher, always, however, with favorable results. I prefer to have the teachers read the theses and express an opinion as to their merit, but the final review is made by me. Thus, the teacher does not need to "pluck" a student. That unpleasant duty falls to me. The reason for that is not to magnify my position at all, but to relieve the teacher of the onus of flunking a man after being closely associated with him for three months. He feels rather sorry if the student does not make good. A note from the teacher to me helps me out in arriving at a decision. To straighten out a poor record, I may give a student a special assignment. It has never made any trouble between me and the student. He feels that he is being dealt by fairly.

I am not obliged to use only members of the faculty for this teaching of clinical clerks. I can choose anyone to teach these students, and, being familiar with the good teachers in Chicago, it has not been difficult to get some very fine, strictly extramural teach-

ing for the hospital group. These men have all only one or two students. The result is that I have had applications from men who would like to have one of our students. I have had applications from hospitals who would like to get some of these clinical clerks because they feel that such teaching will stimulate their attending staff to do even better than they are doing already.

All these applications are carefully investigated. I find out all about the hospital and the men. In one case I was asked to meet the staff and tell them what the work was and what it would mean to them and to the hospital.

The dispensary section is divided into eleven groups of three and four each. These groups rotate in their assignments. For instance, Group I goes to medicine in the morning and surgery in the afternoon, for two weeks. Then it goes to pediatrics in the morning and neurology in the afternoon for two weeks, and so on for 12 weeks. Some services are of only one week duration; some can only be visited once or twice when clinics are not held daily.

Every student goes into what we call the preclinical department for one solid week. During that week he is excused from *all* other work in the school. He goes on duty at 8:30 in the morning and remains there until at least 4 o'clock in the afternoon. The preclinical department is the admitting department of the dispensary. All patients coming into the dispensary for the first time must pass through the preclinical department and from there they are sent to the division of the dispensary where they belong. The clerks write a history and make the physical examination. They make a provisional diagnosis and then check up on it by follow up of the case. The department of medicine says that the work done by these clerks is so good that they have found it wholly unnecessary to duplicate it and take up that extra time.

The preclinical department is in charge of a full-time teacher. The boys are very eager to spend as much time in that service as possible, but in order to give them all a chance, I can give them only one week. I make frequent visits to the dispensary. I drop in at any time and see whether they are there, whether the teachers are there, and how the work is being done. I get an attendance report on the teachers as well as on the students. I have an office in which I can be consulted at set times and I want to assure you that I am never lonesome. Teachers and students avail themselves freely of the opportunity. Each student writes eight theses on this service.

Our dispensary is in charge of the social service department which has a representative, a nurse, in each division of the dispensary. These nurses keep the attendance record of the students and of the attending men. The students go to her desk to check "in" and "out," and in between times the social service worker makes sure that the students are there and have not skipped out the back door.

That, briefly, is the plan. There is more to it, but the underlying idea is one of constant personal supervision of each individual student, helping him, putting him on the right road and keeping him there. Without the whole hearted cooperation of the teachers, the plan is bound to be a failure. Our plan is anything but that. It goes without saying that I am very grateful to these men for helping me to try out a plan which is probably entirely new in some of its phases at least.

#### DISCUSSION

DR. LOUIS B. WILSON, Graduate School University of Minnesota, Rochester, Minn.: This seems to me one of the most important of the newer things tried in undergraduate medical education in recent years. I should like, however, to call attention to the fact that it is practically what the University of Minnesota adopted twelve years ago for graduate medical education. The work in the training of specialists, not general practitioners, in the University of Minnesota consists fundamentally of the preceptor system in several centers. (I much prefer the term "preceptor system" to the term "extramural," because the term "extramural" is a tacit confession that there is a wall around our training in undergraduate medical work.)

The system has worked very well in the University of Minnesota. The fundamental thing is exactly that outlined by Dr. Bardeen. We have come, however, to find that there are many additional things which must be brought in. Men in training for the practice of special fields of medicine must take a much longer time in learning the art than is indicated in the brief periods mentioned by Drs. Bardeen, Cabot and Schmitt. They cannot, thus, be dissociated for so long a time from the science of medicine; thus it has become necessary either to bring the men back to the parent institution or to develop in the preceptorial groups larger interest in the scientific side of medicine. It has become necessary thus to develop larger interests in research in the various fields. It has also become necessary to more or less organize the groups that have developed.

The seminar has come to be the fundamental thing in the teaching so far as didactic teaching is concerned. It has also been necessary to recognize that when so long a period is devoted by the student to learning the art of any particular field of medicine, that he should not for that period be dissociated from interests on the borderline of medicine.

Thus it has become necessary to develop in the various centers things which pertain to his general culture, to his interests in those sciences which are related only somewhat distantly, if you please, to the practice of medicine, such things as biophysics and biochemistry, for example, all the newer problems which are confronting us in these fields.

Then it has been necessary, we have felt also, in the end, to determine whether the individual really was competent to begin the practice of his proposed specialty in a scientific manner without the further supervision of his preceptors. Thus, there has developed a system of careful grading of men, confidential grades, of which they know nothing, however, but grades which may be used at the end in determining whether the individual shall be passed upon by the university as a competent internist, a competent orthopedist, or not. So the whole thing in the last twelve years has developed into a fairly clear organization.

I intend to present in the *BULLETIN* in the near future a detailed statement of what we are attempting to do at the University of Minnesota in this regard.

## COORDINATION OF MEDICAL PROBLEMS; MEDICAL EDUCATION; PUBLIC HEALTH AND HOSPITALS IN THE REPUBLIC OF HAITI\*

CHARLES S. BUTLER

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Believing that the historical method of approach will give a better understanding of the medical and sanitary state of affairs in Haiti at the time when the Government of the United States started an effort to bring this unfortunate people into willing and progressive cooperation with other nations, and feeling that it will also give this Association a better insight into the problems encountered in 1915, of their handling up to now, and of those which remain for the future to solve, we will touch upon some of the high spots in the history of Haiti, the island, and of Haiti, the republic.

Recall that the island is 28,249 square miles in area and is, therefore, about the size of the state of South Carolina. The eastern two-thirds has a Spanish-speaking population numbering 750,000 and constitutes the Dominican Republic. The Western third had a density of population of over 200 per square mile. Perhaps, 95 per cent of this population is of pure negro blood and is wholly illiterate. The language is an unwritten patois of a few hundred words.

\*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.



The remaining 5 per cent of the population speaks pure French and includes many highly intelligent and cultured people. This western third is 10,204 square miles in area or about the size of the state of Maryland. This part constitutes the Republic of Haiti.

Haiti is grippingly interesting for the physician from its discovery down to the present. If things medical could be unearthed from the archives of Spain and of France, much valuable material would come to view. Many sidelights doubtless would be thrown upon malaria, yellow fever, syphilis, and the animal parasitic diseases as well as upon the host of vegetable and mineral curative agents which physicians of those early days thought would come back to Europe from Hispanola. *Guaicum*, logwood (hematoxylin) and "pian" would unquestionably furnish many thrills.

French colonial medical history is captivating for it was during this epoch that the mixing of European, African, and American diseases, resulting largely from the slave trade, found its apex. Above all, Haiti's medical history since becoming an independent state, pathetic though it be, is nevertheless inviting if one but had the time to devote to it.

The political history of the island, though largely forgotten, is most interesting. It acted as the cradle of civilization for the new world, and if the white man may boast of christianity which took root there coincidentally with its discovery, the benefits of which have since spread over the western world, he must also acknowledge his guilt for introducing human slavery into the new world through this portal. If he may congratulate himself upon the introduction of the culture of sugar cane, the coffee tree and the tobacco plant to the trade of the western world through this little island, he must not forget the price paid by other races of our fellow man for this commercial advancement. If he is tempted to feel proud that European ideals of good government first found footing in Haiti for the new world, he should be chagrined to recall that all the crimes of which governments are capable have been perpetrated there upon the unfortunate Indians and Blacks whom the white man has from time to time attempted to govern. If he is inclined to censure some of the black rulers of the Republic of Haiti for cruelty and bloodthirstiness in their treatment of the Whites, he must recall that he himself is responsible for showing the negro how to do all these revolting things. If he would make merry over the petty pomp and ceremony of some Haitian governments, he must remember that the black man was but imitating some of his own curious, Caucasian customs along this

same line. Lastly, if he would become puffed up over some of his congeners, whose great minds have enabled them to become masters of the complicated technic of war and of organization, he would do well to recall the words of Wendell Phillips in applying that acid test of the manhood of man, namely the manner in which he meets his death, to Napoleon Bonaparte and to that pitiful Haitian victim of Bonaparte's ambition, Toussaint L'Ouverture. "God grant," he said, "that when some future Plutarch shall weigh the great men of our epoch, the Whites against the Blacks, he shall not be permitted to put that whining child at St. Helena into one scale, and into the other the negro meeting death like a Roman without a murmur in the solitude of his icy dungeon." (Napoleon Bonaparte and Toussaint L'Ouverture.)

We are convinced that it is a moral obligation of the white races of the new world to assist his little Caribbean republic to her feet and when once on her feet to give her the moral and material backing necessary to keep her there.

It will become apparent as we proceed that we not only have a moral obligation in this connection but that the principle of rendering to backward peoples the much-needed medical assistance, is good international economy as well.

We physicians have failed to appreciate the enormous importance of our calling in helping governments to confer the benefits of civilization upon backward races. It is instinctive for the human being to seek the advice of some form of physician when bodily ills beset him. If none better is available, he will turn to the stone-age man, or to the voodoo doctor rather than to die without a struggle. When a physician cures the complaints of an individual, he nearly always captures the friendship of that individual at the same time. So it is with governments in relation to the masses. If a kindly government attends to the bodily ills of these backward peoples without commercialism or ulterior motive, it benefits in two ways. The government wins the friendship of the masses and, by elevating the standard of health, it increases the earning capacity of the laborers.

The poor economy of having a dependent people in a morally and physically diseased condition, may be gathered from a study of the latter days of the French rule in Haiti. France lost this, her principal colony at that time, because of disease. A big fleet and an army of 30,000 European troops, temporarily unoccupied at home, were sent to Haiti in 1802 by Bonaparte, under the command of General Victor E. Leclerc, his brother-in-law. The object of this expedition was to reimpose slavery upon the Haitian people who,

previously, had been set free. Malaria and yellow fever killed off most of the original army very quickly. The nonimmune European replacements also died about as fast as they could be gotten across. In November, 1803, General Rochambeau, who took command after the death of Leclerc, who himself had died of yellow fever, was compelled miserably to capitulate and France was ejected from the island. In this way malaria and yellow fever cost France her most valued colonial possession.

It is, however, not necessary to dwell upon the economies effected by paying heed to the advice of the sanitarian and the medical man in such matters. Many governments engaged in experiments in pragmatism such as that of the United States in Haiti, have made this discovery. The experience of the United Fruit Company operating in the Caribbean, and of a dozen other big commercial companies in the eastern and western Tropics shows that it is best for generals of commerce and industry, as well as for military generals to "purchase this big thing from the physician."

Columbus landed on the northwest Peninsula of Haiti, at what is now called Mole St. Nicholas, December 6, 1492. He gave the island the name of Little Spain—Hispanola. Within fifteen years of the discovery, Spain had colonized the eastern two-thirds of the island, had subjugated all the Indians, actually killing a large part of them, and making life so unbearable for the balance that thousands resorted to suicide in order to escape their misery.

The resulting dearth of laborers necessary to gold-getting and to tillage of the soil, caused Spain, in 1512, to start importing African slaves. Each colonist was allowed twelve, and the traffic in slaves increased up to 1789 when there were upward of 500,000 in the French colony alone.

The western third of the island was settled largely by the buccaneers who had used the neighboring island of Tortuga, separated from Hispanola by a strait ten miles wide, as their base for depredations ever since the year 1630, at which time they were driven from St. Christopher by the Spaniards. The buccaneers were recruited from the nationals of France, Holland and England, each of which was opposed to Spain. By the treaty of Ryswick, of 1679, Spain ceded the western third of Hispanola to France in recognition of the preponderant French element in the population of this portion. During the century following, France brought this section to a very high state of development. In 1726 the coffee tree was introduced from Martinique and very quickly reached a high state of productiveness. Much of the subsequent history of the French colony was

written around the coffee trade, though sugar, cotton, and other products figured in the enormous wealth accumulated by the Creoles who owned the plantations. These colonial-born Frenchmen were able to accumulate wealth and to live in luxury because of the possession of large numbers of slaves. Their slaves, however, were looked upon and treated as animals. These landowners became very dissolute and degenerate.

In 1789, as stated above, there were over 500,000 slaves in the French colony. They outnumbered the Whites by about sixteen to one. In these conditions, we may easily see the cause of the downfall of this colony. The resulting free government of Haiti is not only historically unique, since no other negro race has ever driven out a white one, but it is the best example in the world today of a government composed entirely of blacks, and administered along constitutional lines.

From 1790 to 1804, Haiti, or as it was then called, Saint Dominique, was in constant turmoil and revolution. This culminated in the surrender of the French Army in the fall of 1803, as previously stated. An independent government was established in January, 1804, and the original Indian name, "Haiti" was taken. The two names, "Hispanola," and "Saint Dominique," or in Spanish "Santo Domingo," under which the island had been known up to that date, disappeared.

From 1804 to 1915, the medical side of Haiti's story is not long to tell. The first ruler after independence was Dessalines who made strenuous efforts throughout the Republic to butcher all the Whites who remained. In doing this he butchered also most of the talent of whatever kind which was left in 1804. Laws were enacted which prevented foreigners owning property in the Republic and Haiti soon developed the "shut-in" character in her nationality. With this poor "take-off" the "ship-of-state" quickly went into a "tail-spin," so to speak, which she did not come out of until 1915. During this period of 111 years, there were twenty-six rulers but none of them seemed able to stop the downward course. Of the twenty-six, one committed suicide, four died in office, seven were assassinated, three only retired at the expiration of their terms and eleven were deposed by revolution. An idea of the debased state of politics may be gathered from the fact that though the period for which the president was elected to office was seven years, the Republic had seven presidents during the seven years immediately preceding 1915. A further idea of the unsatisfactory state of affairs may be obtained from a description of President Vilbrun Sam's unique way of mak-

ing himself secure in office. His action was the cause of intervention on the part of the United States in the affairs of Haiti. Vilbrun, as he is called, assumed office March 27, 1915. He was killed during the following July by a frenzied mob, which dragged his mutilated remains about the streets of Port au Prince. Vilbrun's method was the soul of simplicity and consisted in securing the commitment of his political enemies to the national penitentiary in Port au Prince, and then giving orders to the general in command of the place to murder all of them. In this manner on a day in July, 1915, the president of the Republic assassinated about 60 of his subjects, many of them highly influential citizens of the State.

With politics in such a shocking condition as to permit of a crime like this, what could we expect from the state for medical education or sanitation or for hospitals in the way of constructive legislation? During the century preceding 1915, two or three outstanding physicians had dared to speak up for those medical essentials to decent government, but their warnings were set aside, because politics were more powerful than patriotism. We mean here politics in their machiavellian sense. In the sense of Gouverneur Morris, politics are not only necessary machinery for the advancement of medicine in its relation to the State, but constitute the very essence of patriotism.

During the nineteenth century, many visitors to Haiti had, from time to time, described the horrible conditions which prevailed throughout the Republic in sanitation, and the menace which existed there for commerce and for the health of nations. Notable among these writers were Sir Spencer St. John, and the historian, James Anthony Froude. In 1900, Vernon Hesketh Prichard visited Haiti and wrote a treatise on the Republic, under the title "Where Black Rules White." One paragraph from his book will suffice to show that these same horrible conditions existed right down to the present century—"It is appalling to imagine," he said, "what might happen were an epidemic to break out here. The town has its foundations literally set upon decay. I have seen more than one of those unhealthy spots to which is attached the sobriquet of 'white man's grave,' but none of them have the invitation to disease written so plainly across their faces as this city of Port au Prince." This menace was permitted to remain right under our noses, so to speak, for a whole century. With such a historical background, the state of affairs in medicine may well be left to the imagination. Elsewhere the writer has attempted to picture it in the following paragraph:

"We had then in 1915," when the United States Government intervened in Haiti, "this great amount of morbidity against which

no preventive measures had ever been used and, as far as the majority of the people is concerned, no systematic therapeutic or diagnostic procedures had ever been attempted. *Treponema pallidum* was allowed to gambol unhampered in the circulation of some 70 per cent of the population; much of this syphilis was innocent. The vast army of malaria carriers was allowed to infect the vaster one of *Anopheles albimanus*; no Haitian hookworm had ever known the discouragement which comes to its blood sucking propensities from a dose of thymol or chenopodium, and no Haitian dysentery bacillus had ever felt the urge to agglutinate which comes from a little high titre specific serum. The typhoid bacillus was on intimate terms with *Musca domestica* and where the fly failed the water supply gave the bacillus all the support it could reasonably ask. Millions of rats harboring tens of millions of fleas prayed for the introduction of *Bacillus pestis*. *Bacillus tuberculosis* was allowed to take its terrific toll of human life with no one to care "whence it cometh and whither it goeth." Only *Aedes aegypti* cursed the gods in that year, for she had lost from her kit of destructive agencies, the virus of yellow fever, and must henceforth be content to traffic in those weaklings among the "men of death," dengue and filariasis. The chief actor in her drama was in the hands of the sheriff."

When the treaty between the United States and Haiti was negotiated September 16, 1915, sanitation, the hospitals, nursing and medical education were in such a backward state as may best be compared to that which existed in Europe between the fourteenth and sixteenth centuries, when witchcraft was in flower.

Between 1915 and the present time, the Haitian government and the government of the United States have co-operated along all lines with increasing effectiveness.

About the only agency which served to carry over the so-called hospitals to the better days of the twentieth century was the French nursing sisters of the Catholic Church. These sisters have been doing hospital work in Haiti for upward of fifty years, and it is difficult to picture the depths of misery to which the population would have sunk had it not been for their kindly ministrations and unselfish devotion to duty. Their work was well done in spite of the meagerest sort of support on the part of the government and in the face of heart-breaking discouragements of every kind.

After the American intervention, immediate change for the better was noted along all of these lines except that of medical education, which was a later development. The improvement was limited, however, by the small income of the Republic, and by the fact that



there was need for the enactment of laws organizing a department of health. In 1922, General John H. Russell was appointed American high commissioner to Haiti, and as he was the ranking officer of the United States military forces there, he acted as the chief of both the military and civilian functionaries of the United States government. This did away with much lost motion and has proven most effective in every way.

The finances of the Haitian state, as administered latterly by a representative of the United States, Dr. W. W. Cumberland, are in a high state of excellence, but the income of the Republic from all sources is only about \$8,000,000.00 per year, and it will not increase much above this figure until the land can be made to produce more. Steps are being taken to increase the products of the Republic by bettering the land, the methods of agriculture and the health of the laborers. About \$3,000,000.00 of the Republic's income goes to paying off the national debt, defraying the expenses of the gendarmerie, which acts as the police force, and paying for the administration of justice. There is left only \$5,000,000.00 to carry all other expenses of the government. This figure is about equal to the income of the Pennsylvania Hotel in New York, and as it must pay for all remaining governmental expenses including public improvements of every kind, it is easy to visualize the limitations that must necessarily be imposed upon expenditure.

The wage of the Haitian laborer is only one gourde and a half (30 cents) per day. Of course, he cannot pay doctor's bills, however small, with such an income. This means that the entire expense for the medical necessities of some 2,000,000 people must be borne by the state.

Since 1919, a number of laws have been enacted which practically place everything connected with sanitation, quarantine, hospitals and medical education as well as medical licensure in the hands of the director of health.

Since 1915, the agencies, other than the Haitian treasury, which have contributed to advancing the Public Health Service, are as follows: The medical department of the United States Navy in addition to furnishing all of the medical and hospital-corps and female-nurse-corps personnel for the forces engaged in purely military duty, has furnished medical officers and hospital corpsmen necessary for supervising the medical work of the gendarmerie. These are not of the Public Health Service, of course, but have played a part in making a Public Health Service possible.



From the time the Haitian Public Health Service was established in 1919, the Bureau of Medicine and Surgery of the U. S. Navy has acted favorably upon every demand for personnel called for by the extending activities of that service. Not only in numbers but in the type of medical officer required for the particular activity, has this been true. Last year, for instance, it became necessary in connection with the new medical school, to have several of the Haitian teachers backed up by men who could teach in the French language. Admiral Stitt very generously supplied four officers to carry on this work. One of these was for surgery, one for internal medicine, one for instruction in the laboratory subjects, and one for urology.

Next in point of time to come to Haiti relief in a medical way was the American Red Cross. A nurses home for the training school at Port au Prince and an addition to the hospital at Cape Haitian, together with substantial amounts of money for the purchase of drugs have been contributed by this worthy organization.

In 1924-1925, the International Health Board completed a medical survey of Haiti under the direction of Dr. George C. Payne. This survey was beneficial in many ways. Among others, it showed the magnitude of the public health problems which remain to be solved in this all-too-long neglected little country.

In 1926, Dr. Richard M. Pearce, director of Division of Medical Education of the Rockefeller Foundation, came to Port au Prince to look over the situation in medical education, and as a result of this visit, certain recommendations were made to and approved by that Board. These recommendations are now in process of being carried out.

At the beginning of the present year, the medical department of the United Fruit Company carried out a malaria survey in Haiti which has resulted in more accurate information as to the magnitude of the malaria problem there.

As a product of the several activities and forces cited, it has been possible to make very definite advances along the several lines noted in the title to this paper. Beginning in 1915, these improvements have increased year by year, and it is thought that with the completion of the plans at present projected by the government, an ideal public health machine will be the result in the near future. It is the desire of Admiral Stitt that when the treaty obligations of the United States are discharged, and the American director of health turns over affairs to his Haitian relief, he may turn over a public health machine, as perfect in type and as smooth in its running as it is possible to make, with the means at hand.

Sites for a quarantine station, asylum for insane and a hospital for lepers have been acquired and these buildings will soon be erected. In connection with maritime quarantine, in 1926, the Republic of Haiti ratified the Pan American Sanitary Code, thus taking her place with other nations desiring to facilitate the demands of commerce and at the same time to simplify the regulations for limiting the spread of quarantinable diseases across international boundaries.

We can only enumerate the items of improvement along the several lines which have been effected since 1915. Sanitation, which in Haiti, among its other functions, has charge of municipal street cleaning in all the towns and cities, has developed to such an extent that all the large towns now operate this service by motor transport. Refuse from the streets is in every case used for fills to eradicate mosquito breeding swamps. In this way several swamps which have been a menace for centuries have been eradicated and the adjoining towns freed from mosquito-borne diseases.

A corps of sanitary inspectors has developed in the cities and these inspectors are improving steadily in their usefulness. Port au Prince has developed an excellent municipal health service and the other towns have similar organizations. Clean streets are now a striking feature of Haitian cities.

In a country where the morbidity is so tremendous as in Haiti; where so many people suffer from acute and chronic diseases; where syphilis and yaws probably affect 70 per cent of the population at some time during life, where, in the worst districts, nearly 100 per cent of the population is suffering from malaria; where diseases transmitted through night soil, such as the dysenteries, typhoid fever, and ancylostomiasis are so common; in such a country, the importance of a well developed rural clinical service is apparent. In order to take care of this large incidence of diseases, 47 standard rural dispensaries have been completed. In this way about 35,000 people are seen each month. The educational value of this massive treatment, aside from its purely medical importance, is great. The country districts where voodooism was formerly rampant are now being invaded by modern ideas regarding sickness and health.

Each of the ten public health districts has a public health officer and an assistant from the United States Navy, and as many Haitian physicians as necessary to carry on the work. Each district has a hospital, the size of which depends on the needs of the district. Every one of these hospitals has been rebuilt during the past five years, and several of them are new throughout. They vary in capacity

from 100 to 400 beds. Each hospital acts as the headquarters of the rural clinical dispensary service. In addition to these rural dispensaries, clinics are held in about 50 rented buildings, making a total of approximately 100 places scattered over the Republic where clinics are held from one to four times per month. The medical officers who have developed these rural clinics have undergone many hardships. They take great pride in never disappointing those who come to the clinics to consult them. Some of these dispensaries are served by aeroplane. In this way thousands of people are coming under treatment today who, up to quite recently would never see a doctor from the cradle to the grave.

The most important feature in the development of the Haitian Public Health Service is the education of the younger members of the native medical profession. Year by year more native physicians are employed by the Public Health Service, and to the best of their ability they absorb the spirit pervading the service. But these men, unfortunately, have little to build upon. They are all graduates of the National School of Medicine of Haiti, which institution has had almost no chance to develop.

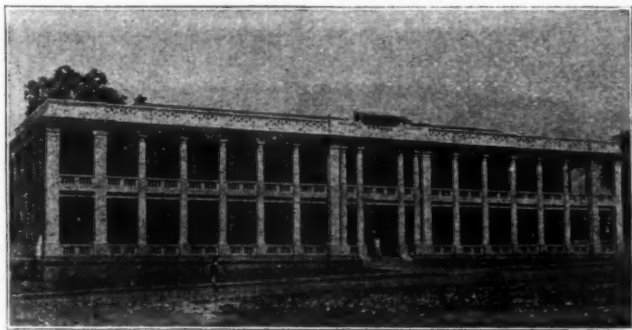
In June, 1926, the Government enacted a law placing medical education under the Director of Health and providing for the complete reorganization of the National School of Medicine and Pharmacy. This transfer of medical education to the office of the Director of Health was desirable for several reasons, the chief of which was that under the existing treaty between the United States and Haiti, the treaty officials of the United States had no authority whatever in the Department of Education. The total annual budget of the National School of Medicine was less than \$8,000.00. There were no decent quarters for the school, and the faculty being paid next to nothing for their services, took little interest in the work. It is unnecessary to describe the type of physician graduated from this institution. There was no place to teach medicine, nothing to teach it with, and most of the faculty had nothing of modern medicine to impart. Furthermore, the cards were so placed that, though there was an enormous amount of clinical and pathological material available for instruction purposes, practically no use was made of it.

The same law which transferred medical education to the office of the Director of Health, also provided for the erection of a medical school building in the grounds of the Haitian General Hospital. Provision was likewise made for properly paying the faculty, three members of which are now full time men. The Navy personnel connected with sanitation, hospitals, quarantine and rural clinics

must be able to speak Creole, and, of course, all those connected with teaching must speak French as well.

Thanks to the Division of Medical Education of the Rockefeller Foundation, the matter of supplying a permanent faculty of adequately trained men has been taken care of. The Board has provided eight scholarships for men who eventually will teach in this school. These scholarships are being given, some in the United States and some in Europe. The Foundation in addition, has equipped the laboratories of the new medical school building and has supplied its library with books. This building received its first classes October 1 of this year.

The course of instruction has been completely renovated. Four full years of instruction are now given and an intern, or fifth year,



NEW MEDICAL SCHOOL BUILDING AT PORT AU PRINCE, HAITI

is spent in the Haitian General Hospital before a diploma is issued. American methods of teaching medicine will be put into effect in this school, but the fact that most of the students speak French only, will operate as a handicap to this desirable end. The medical school was planned to turn out a sufficient number of properly trained physicians to care for the population of the Republic which at present is about 2,500,000.

To summarize, there have been organized in Haiti, ten public health districts. Each of these has its division of sanitation and its division of hospitals. Ten hospitals have been built, one in each district, and these take care of 100 rural clinics distributed over the Republic. The sanitation division takes care of all municipal and rural sanitation in the Republic, and looks after all vaccination. A

nurses training school has been organized and is now turning out capable female nurses at the rate of about ten each year. The water supply of Port au Prince has been chlorinated and plans are under way to chlorinate the water supplies of all the other larger towns. A medical supply depot has been built in Port au Prince sufficiently large to provide medical supplies for all ten Public Health districts. In six cities street cleaning and garbage removal is accomplished by motor transport and in two cities garages sufficiently well equipped to make all repairs upon the motors have been developed.

A public health laboratory has been developed in Port au Prince which cares for the work of the entire Republic. The ten ports of entry of the Republic have all the quarantine work of the state performed by officers of the Public Health Service and a state quarantine and disinfecting plant for ships is planned for the immediate future. Suitable sites for this station and also for a State Institution for lepers, and another for the insane have been purchased. These institutions will be built as soon as the income of Haiti will permit. A medical school has been built, and a faculty of Haitian teachers has been provided for. This plant, it is thought, will be admirably suited to the requirements of the Haitian population for all future time.

## TEACHING THERAPEUTICS

GLENVILLE GIDDINGS

Emory University School of Medicine, Atlanta, Ga.

In the department of therapeutics, the work, until September, 1926, has consisted of 30 hours, one hour per week throughout the year. The work was given exclusively to juniors, and was entirely didactic with quizzes, both oral and written, at intervals. Believing that a branch of medicine as important as therapeutics should be given more time, an additional course was begun this session. It was given to the seniors in the form of therapeutic clinics. It is rather difficult to attempt to teach a class the treatment of a disease when its clinical history may be unknown to them. To obviate this, I have always attempted to follow the work of the other members of the department of internal medicine, so that the student might get instruction in therapeutics last; that is, after study of the disease itself had been completed. In a measure, this works very well, but in some instances instruction in therapeutics cannot be given coincident with other work.

I believe we have solved this problem very well by extending the work into the fourth year. Our idea is to give the student bedside instruction in the actual treatment of disease. Each week patients are brought down from the wards and an informal discussion is given on the treatment of their particular disease. This clinic differs from daily ward rounds in that it is limited to treatment. Not only is the case considered from the standpoint of drug therapy, but the dietetic requirements of the individual, hydrotherapy, irradiation, the possibility of complications, and their treatment, are all discussed. The student is not graded on his work in this course, which, I believe, tends to create an atmosphere of frankness which might not exist if he realized that he was being graded on his answers. This class is very well attended; in fact, it was largely at the request of the students that the work was attempted.

This clinic is conducted very systematically. Suppose that the case to be discussed is one of lobar pneumonia. First, is mentioned the advisability of determining the offending organism (the typing of the sputum). This is important both from a therapeutic and from a medical standpoint, in that it is some aid in prognosis; and again, if it is a type 1 pneumococcus, the advisability of administering type 1 serum must be considered. Whether we regard this serum as effective or ineffective is not the point. The student should know that there is such a serum; he should know the indications for and the contraindications to its use and the dosage.

Drug therapy is mentioned next. The use of digitalis is discussed; whether it is advisable to administer this drug routinely or to await the development of symptoms; the dosage of the drug; whether it should be given in small doses throughout the disease or in sufficiently large quantities at the onset to digitalize the heart early. The advisability and choice of stimulants is considered; such as, caffeine sodiobenzoate, camphor in oil, whiskey and strychnine, together with their dosage and the frequency of their administration. The importance of morphine and the indications for its use are considered. Mention is made of the rarely used drugs; for example, quinine and urea hydrochloride and ethylhydrocupreine, so that the student may know that there are such drugs, and that they have been used in the treatment of this disease.

The question of hydrotherapy is then taken up; what temperature constitutes an indication for a sponge bath; what should be the temperature of the water; what the indications are for raising or lowering the temperature of this water; how the sponge bath is given; what is meant by "drop temperature" and what constitutes

a satisfactory "drop"; how many "sponges" may be given in twenty-four hours, and what should be the relation between giving the sponge and the taking of nourishment.

Next, comes the care of the intestinal tract, the treatment of meteorism and its various ill effects, and a discussion of the numerous measures that may be necessary for its relief. These points are not gone into in the form of a didactic lecture, but rather of an informal quiz, a conference, in fact, between the student and instructor.

We take up the question of diet: the articles that are allowed during the acute stage of the disease and when the patient is permitted a more liberal diet. The question of room temperature is discussed; whether it is advisable to keep the patient in a cold room, as was the practice a number of years ago, or whether the room should be comfortably warm. Other points are brought up; the use of plasters; when the patient may be propped up, to get up; complications and their treatment.

In addition to the demonstration of treatment, these clinics afford an opportunity of giving instruction to the senior student in subjects on which he feels the need of further information. For example, before Christmas, at the request of the class, two clinic periods were devoted to a consideration of the indications, contraindications and results of intravenous therapy. Several additional periods, likewise at the request of the class, were devoted to writing useful prescriptions. Prescription writing has always seemed to be a weak point, not only with our students, but with those in other medical schools.

Special attention was drawn to this in the annual report of the American Medical Association several years ago. I believe that I was probably more ignorant of prescription writing at graduation than is the average senior student of today. I am convinced that the outpatient departments and hospitals are probably responsible for the existence of this condition. Prescription writing is an art that comes only with practice and experience, and, where so many drugs go entirely by number, any ability which the senior student may have in writing prescriptions is soon lost while serving his internship. All of us who have served in the outpatient department know that the patient may be given R 53 and R 41, these numbers meaning nothing to the student except, possibly, that one is a cathartic and the other a tonic. This practice is not local, but exists in all the larger institutions I have visited in this country. In handling large



numbers of patients this is done, of course, as a time saving measure, but the ill effects of such a practice are self-evident.

There is nothing original in what I do, since my teaching is based on custom and material that I have gotten from the various books on materia medica and therapeutics that have been written in recent years. Forscheimer's System is, I believe, still the standard on therapeutics in this country. A number of single volume works have appeared; namely, Osborn, Stevens, Palfray, Cushny, Hare, Campbell, Bethea and others. Each has attempted to approach the subject from a different point of view and all have more or less succeeded. I have tried to take what I thought was best from each work and synthesized them into notes which are given to the class.

Let me sketch an outline of the discussion of the treatment of diphtheria as an example. At the beginning of the lecture, a definition of diphtheria is given. Then, a brief description of the Klebs Loeffler bacillus with its differential staining reactions is given. The importance of the routine taking of throat cultures in suspicious infections is stressed. The difficulty of differentiating diphtheria from streptococcus sore throat and Vincent-Hoffman's infection is mentioned.

The Schick test is given in detail. A suitable syringe and needle for making the test and the test material are shown. Color plates of a positive, a negative and a pseudo-Schick reaction are passed around the class so that the students may get an idea of what is meant by these terms. Actual tests may also be made on the students themselves. Active and passive immunity in this disease are discussed, as are the results obtained by the injection of the toxin-antitoxin mixture and the method of giving these injections. The symptoms and signs of the disease are not mentioned.

The use of diphtheria antitoxin is discussed in detail. The methods of administering the serum and the indications for each method are given. The current opinion as to dosage and repetition of serum, the possibility of anaphylaxis and its treatment, and the mode of administering serum to a patient who shows symptoms of being sensitized to horse serum are dwelt on.

The local treatment is mentioned as a matter of only passing importance. We then take up a consideration of the general care of the patient. This includes the diet, hydrotherapy, elimination, and what is quite important, the care of the myocardium. Laryngeal and nasal diphtheria are discussed together with the several indications for their treatment.

The resultant paralysis and cardiac complication are mentioned, and their treatment. In other diseases with more numerous complications, this topic may require considerable time.

The after-care of the patient includes: the necessity of obtaining consecutive negative throat cultures before quarantine can be lifted, and the satisfactory results obtained by irradiating the throats of patients who continue to show persistently positive cultures after the clinical signs of the disease have cleared up. Detailed instructions are given for the fumigation and for the care of material infected by the patient, together with infectious excreta.

This plan, in brief, is the one I have followed in presenting each disease. Of course, if no etiologic agent is known, or if there is no satisfactory prophylactic agent, these phases of the presentation are omitted. The methods of treatment given are all recognized procedures; by that I mean that therapeutic fads and fancies are disregarded. Tropical diseases, excepting malaria and amebic dysentery, and rare or unusual diseases are omitted. The closing two months of the session are spent on a review of prescription writing and the more important drugs in the Pharmacopeia. I show samples of each drug as it is taken up in order that the class may see its physical appearance. This focuses attention on what, otherwise, is a rather dry subject.

I constantly attempt to remind the student that treatment is not the most important procedure in practicing medicine. It would be a truism to say that the most important principle in practice is diagnosis. Therapeutics or treatment avails nothing if we are not able to recognize the condition with which we are confronted. To treat a case of appendicitis, typhoid fever, or meningitis as one of malaria would probably result in a fatality. However, granting that the student is going to acquire the knowledge that will enable him to diagnose these pathologic conditions, the most important thing, certainly from the standpoint of the patient, is the prompt and speedy return to normal health. He will find that the patient is first, foremost, and always chiefly interested in getting well. The procedures that he may institute and the drugs that he may administer will interest the patient only to the extent that they better his condition.

It is also a truism to say that the physician is judged by his patients largely on the basis of treatment. Knowledge of anatomy and pathology, indispensable though they are, do not appeal to the patient, nor does he appreciate much of the skill required in diagnosis. It is treatment that interests him. This is the connecting link between the physician and the people among whom he lives and works.

## REPORT OF COMMITTEE ON MEDICAL EDUCATION AND PEDAGOGICS\*

Inasmuch as several years have elapsed since the present by-laws relative to the premedical requirement and the medical school curriculum were adopted, it seemed wise to inquire as to the practical working of these regulations in the various medical schools and to see if there were suggestions for improvement which might now be brought forward. The following questionnaire was, therefore, sent to the schools in membership in the Association in an attempt to elicit this information, and also to obtain an expression of opinion regarding certain other matters which had been brought to the attention of the Committee.

### I. PREMEDICAL REQUIREMENT

1. Do you regard the present minimum requirement as satisfactory?
2. If not, state briefly what modifications you would suggest.
3. Have you found occasion to utilize the exception which permits the substitution of psychology or sociology for biology?
4. If so, has the result appeared to justify the procedure?
5. Have you admitted students on the basis of examination in the premedical sciences?
6. Do you think there should be any special provision made for individuals who have completed courses in dentistry and pharmacy and, if so, what would be your recommendation?

### II. MEDICAL CURRICULUM

1. Is the distribution of time fairly satisfactory as now laid down in the by-laws?
2. Is your institution experimenting with
  - (a) Rearrangement of sequence of courses?
  - (b) Infiltration of clinical work into laboratory years, or vice versa?
3. General suggestions regarding medical curriculum.

### III. NURSES' TRAINING COURSES

1. In your opinion, should this Association interest itself in nursing education?
2. Does your faculty at present, except as individuals, assume responsibility for nurses' courses?

### IV. GENERAL TOPICS

1. Are there specific studies which you think should be carried out by this Association? (If so, please enumerate.)
2. Have you any suggestions to make in connection with handling the large number of applications brought about by individuals applying to several medical schools?
3. General comment.

\*Read by the Chairman of the Committee, Dr. A. S. Begg, at the Thirty-Eighth Annual Meeting of the Association held in Montreal, October 24-26, 1927.

## PREMEDICAL REQUIREMENTS

Out of the seventy-three questionnaires sent out, returns were received in seventy-one cases.

From a study of the replies it is apparent that no marked change should be made in the premedical requirement at the present time, inasmuch as fifty-two institutions regard the present minimum as satisfactory.

A number of schools suggest that the minimum requirement in certain of the specified subjects might be increased, and others are in favor of increasing the total number of hours. In this connection, it was discovered that a considerable number of schools are now requiring three full years of collegiate work for entrance and a few now demand more than the minimum laid down in individual subjects. Chemistry appears to be the subject attracting the most attention, but the modern languages came in for a share in the discussion.

There are some suggestions that exceptions to the stated number of hours in a subject might well be made in the case of applicants who show exceptional ability and present excess credits in other required subjects. There is a feeling, however, that these matters should be left to the individual institutions and that the minimum requirement should be left unchanged.

From a reading of the reports, it is evident that some institutions do not realize that the entrance requirement as laid down by the Association is a minimum requirement, and that there is nothing to prevent any institution increasing the requirement for its own matriculants.

Only eight institutions have taken advantage of the exception permitted under the by-laws which allows the substitution of psychology or sociology for biology, but in the cases where it has been done, it is reported that the results have appeared to justify the procedure. Others who comment on the matter do not appear to favor the exception.

There are five instances of admission on the basis of examination in the premedical sciences and there is practically no discussion of this item.

Certain correspondence with outside agencies and with some of the schools in membership in the Association during the past few years has led to a query concerning the status of courses in dentistry and pharmacy as preparation for the study of medicine and also for credit in the medical schools. From the answers to the questionnaire, it appears that most schools do not feel that special credit should be given for these courses as such, but that the applicants should present their credentials for evaluation to an acceptable arts college and on this basis only should entrance credit be allowed. As to credit in the medical schools it appears that nothing more than course credit should be contemplated and this should only be allowed in those cases where the work done is equivalent to that of the medical school. The number of instances where this would be true appears to be quite small.

## MEDICAL CURRICULUM

In connection with the medical curriculum, many schools are experimenting with rearrangements in the sequence of courses and a considerable number are infiltrating clinical work into the second year and occasionally into the first year of the course. Certain schools are, on the other hand, extending laboratory courses into the third and fourth years. It is true, however, that some regard the early approach to clinical work with some misgiving.

The suggestions regarding the medical curriculum do not offer very much at the present time. There seems to be a desire to allow the present distribution of hours to stand, and we frequently encounter a suggestion that the report of the Commission on Medical Education be awaited before undertaking any modification. However, there are a few comments that may well be included in this report.

One institution thinks that it would be feasible to anticipate in the pre-medical work a sufficient amount of general anatomy and general physiology, so as to begin the teaching in medical school of applied anatomy and applied physiology.

In one instance, it was suggested that the trouble with medical education does not lie particularly in the curriculum. It is pointed out that it is becoming more difficult to secure instructors who have the proper idea as to medical education. Many instructors do not appreciate the relative importance of their subjects, nor the reasons these have been included in the curriculum.

It is suggested that we concentrate on the basic medical sciences and major clinical branches, such as medicine, surgery, pediatrics and obstetrics, and reduce the teaching of specialties and operative surgery to a minimum, placing the specialties in the postgraduate curriculum and seeing that the various standardizing agencies require a reasonable preparation in these fields before licensing for practice. This is a matter which has been under discussion at the present meeting.

One institution does not favor the present tendency in some schools to allow students excessive latitude in the election of subjects, along with a minimum of required work in the various department.

Certain schools have spoken of difficulties encountered in connection with state boards of licensure, and it seems that the suggestion made during this meeting that this Association and the state boards of licensure occasionally hold a joint meeting might serve to bring about better understanding between the two groups.

## NURSING EDUCATION

From a number of sources a query has arisen as to the part which the Association of American Medical Colleges should play in nursing education. This matter was, therefore, inserted into the questionnaire and it was a surprise to learn that fifty felt that the Association should concern itself in this direction. While many of the answers were not qualified, we find a sugges-

tion from more than one source that any action which the Association might take should be in the direction of offering assistance to those agencies which are directly concerned with the problem rather than an active effort to bring about changes. At least two replies suggest that we strive to prevent the same mistakes from being made in nursing education which occurred in the early development of the Association's interest in medical education; namely, overstandardization.

Twenty-five institutions report that their faculties are at present assuming responsibility for nurses' courses.

#### GENERAL COMMENT

Under the heading of general topics there were a number of interesting suggestions for specific studies, a few of which are presented with this report.

1. A study of the number and causes of failures of students in the medical schools to determine the adequacy of the premedical requirement.
2. A study of the feasibility of arrangements to facilitate transfer of students from one medical school to another.
3. A further study of the problem of full-time and part-time teachers.
4. A study to determine some method of selective admission to medical schools.

In connection with the query concerning the handling of the large number of applications, it is apparent that most schools prefer to handle the problem of applications in their own way, although some have suggested the creation of some sort of central agency.

#### RECOMMENDATIONS

On the basis of the study of the replies to the questionnaire, the Committee makes the following recommendations:

1. That no change be made in the premedical requirements at this time.
2. That no changes be made in the medical school curriculum.
3. That the evaluation of work done in the schools of pharmacy and dentistry be left to recognized colleges of arts and science.
4. That the Association of American Medical Colleges record its interest in nursing education and offer to the groups directly concerned in its improvement such encouragement and assistance as may be possible under the circumstances.

(Signed)

A. S. BEGG, Chairman  
LIVINGSTON FARRAND  
BURTON D. MYERS  
E. S. RYERSON

REPORT OF THE INTERNE COMMITTEE OF THE AMERICAN HOSPITAL ASSOCIATION  
FOR 1927

In the final report of the Interne Committee, accepted by the American Hospital Association in 1925, there appeared this recommendation:

"That the American Hospital Association request its members not to appoint internes or to hold examinations for internes until the student has completed three and one-half years of medical study, preferably between March 15 and April 1."

This recommendation was made after consultation with the Association of American Medical Colleges, and the Council on Medical Education of the American Medical Association. Sufficient time has now elapsed for all hospitals and schools who are truly interested in improving the methods of selection of internes to adapt their plans towards carrying out this recommendation.

In order to ascertain whether the time had arrived when the hospitals comprising this association and the medical schools who had previously expressed interest in this were willing to take a definite action, the following letters were sent out to about 80 hospitals and 20 medical schools, asking whether they would support the policy of not appointing or holding official examinations of internes until the student had completed three and one-half years of medical study, the time for appointment and examination to be preferably sometime between March 15th and April 1st.

Replies from these hospitals and schools tabulate as follows:

Nineteen hospitals will support this policy: University of Colorado Hospital, Denver; Colorado General Hospital, Denver; New Haven Hospital, New Haven, Conn.; Michael Reese Hospital, Chicago; Presbyterian Hospital, Chicago; Wesley Memorial Hospital, Chicago; Johns Hopkins Hospital, Baltimore; Boston City Hospital, Boston; Massachusetts General Hospital, Boston; Peter Bent Brigham Hospital, Boston; University of Michigan Hospital, Ann Arbor, Mich.; Beth Israel, New York; Presbyterian Hospital, New York; Good Samaritan Hospital, Portland, Ore.; Providence City Hospital, Providence, R. I.; Vanderbilt University Hospital, Nashville, Tenn.; Mary Fletcher Hospital, Burlington, Vt.; University of Virginia Hospital, Charlottesville, Va.; Strong Memorial Hospital, Rochester, N. Y.

Twelve medical schools will support this policy: University of Michigan, Johns Hopkins University, University of Colorado, Cornell University, Harvard University, University of Pennsylvania, Yale University, University of Virginia, Columbia University, Tulane University, Vanderbilt University, University of Rochester.

Twelve hospitals believe this policy undesirable.

Two schools believe the policy undesirable.

Sixteen hospitals feel that they would not desire to take official action unless they were convinced that a large number of hospitals were going to



support this policy. Half of these were non-committal. Half of them expressed the personal approval of the superintendent.

Twelve replies were entirely formal, stating that the matter had been referred to the proper committees.

The result of this investigation was reported by the Interne Committee at the convention in Minneapolis and certain resolutions were submitted for the consideration of the Association. Largely owing to the size of the meeting, very little discussion was had. The Committee, by personal contact outside of the meetings with the members of the Association, endeavored to ascertain the viewpoint of varied groups, and after conference with the Committee on Resolutions, the original resolutions were changed to read as follows:

RESOLVED: 1. That the American Hospital Association request its hospital members, who are listed as suitable for interne training by the Council on Medical Education and Hospitals of the American Medical Association not to hold examinations or to appoint internes until after March 1 of the graduating year.\*

2. When a hospital appoints an interne, they shall send the following information to the secretary of the American Hospital Association:

Name of interne and home address.

School and year of graduation.

Type of internship.

Date of beginning of internship.

3. If the secretary discovers duplication of appointments, i.e., if an interne, after appointment seeks to leave one hospital and to accept appointment at another, the secretary shall notify both hospitals and the medical school which the prospective interne is attending, stating that the American Hospital Association disapproves of such changes unless sanctioned in writing by the hospital making the antedated appointment.

These resolutions were submitted for the consideration of the Association and were accepted in a general meeting.

Questions of the interpretation of the above resolution may be submitted to the Chairman of the Interne Committee.

(Signed) N. W. FAXON, M. D., Chairman

November 22, 1927

\*In the case of medical schools that require a fifth or interne year for graduation, this should be interpreted to mean not until after March 1 of the fourth year of the medical curriculum. An interne is here understood to mean a doctor of medicine who has had no previous hospital appointment. This resolution is not intended to apply to special hospitals or to special departments of general hospitals.

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DR. FRED C. ZAPFFE, Editor  
25 East Washington Street  
Chicago

### THE MONTREAL MEETING

"The best ever" was the unanimous verdict of those who attended the thirty-eighth annual meeting of the Association which was held in Montreal, October 24, 25 and 26. Sixty-six of the seventy-five schools in membership were represented, in many instances by more than one delegate, and seven schools not in membership sent delegates. All told, 115 delegates not resident in Montreal registered. Needless to say, the McGill faculty of medicine was well represented during all the sessions, but these men and women are not counted as in the delegate group. This attendance stands out as the greatest at any meeting of the Association.

The local arrangements were ideal in every way, well made, well conducted and productive of splendid results. Dr. Martin and his co-workers are to be congratulated on the success attending their efforts, and, doubtless, feel well repaid. The most notable feature was the banquet held on the evening of the first day. One hundred and thirty-eight persons were present. Two features from which a great deal of pleasure was derived were the souvenir fountain pen, stamped with the name of the Association and the date of the meeting, donated by the L. E. Waterman Pen Company, and the booklet, "Hints to Medical Writers," written by Mrs. Maud H. Mellish, of the Mayo Foundation, and

donated by the W. B. Saunders Company. This booklet was enclosed in a wrapper on which was printed a label suitable to the occasion. Addresses were made by Sir Arthur Currie, principal of McGill University, and the Honorable Athanase David, provincial secretary of education and public hygiene.

The program was a most interesting one. The only criticism that might be made is that it was, perhaps, too lengthy for the time allotted to the reading of papers; therefore, discussion went by the board. And, after all, discussions are often enjoyed more than the paper itself. However, inasmuch as many, if not all, of the subjects presented were comparatively new, being in the nature of experiments, it is quite likely that there was not much need of discussion. At any rate, everybody felt that it was an exceptionally good program, and that is the main issue.

Indianapolis was chosen as the next place of meeting; the date—October 29, 30 and 31, 1928. A visit to the medical school of Indiana University promises to be of great interest and profit.

### MEDICAL ETHICS

At the meeting of the Board of Trustees of the American Medical Association held in November, 1926, a recommendation was adopted expressing the hope that the Council on Medical Education would "undertake to have lectures on medical ethics made a part of the curriculum in every approved medical school." This matter was taken up at the business meeting of the Council, Feb. 13, 1927, and the following report was unanimously adopted:

"The Council on Medical Education and Hospitals of the American Medical Association recommends to the Association of American Med-

ical Colleges that adequate instruction in the traditions and principles of medical ethics be included in the required curriculum of all medical students. While realizing that the subject is now touched upon in all schools and that its principles can be inculcated by example, yet the Council believes that detailed and sympathetic explanation of the "Principles of Medical Ethics," as formulated by the American Medical Association should be the minimum of the formal instruction given in medical schools.

The Council suggests that the subjects of medical economics, medical jurisprudence, medical history and perhaps also in some instances pastoral medicine might be conveniently grouped with that of medical ethics under the general title of the Social Relations of the Physician."

The Council brought this resolution to the attention of this Association, and it was discussed by the Executive Council in its business session. A recommendation was made that all membership colleges be urged to consider the matter and make such arrangements for teaching medical ethics, etc., as was possible. At the same time, it was pointed out that in nearly all schools more or less teaching in this field is already being done, and that interest in it is growing rapidly. Assurance was given to the Council on Medical Education that this Association will gladly co-operate in furthering this movement.

#### STUDY ON FEEBLEMINDED

The following resolution was passed by the American Association for the Study of the Feeble-minded at its fifty-first annual meeting:

WHEREAS, it is evident to the members of this Association that the extent of instruction given in medical schools on the subject of mental deficiency is inadequate.

THEREFORE, be it resolved that the Committee on Medical Education of the American Medical Association be memorialized by this Association urging them to foster a more liberal and comprehensive course on this subject in the medical schools of the country."

The resolution was sent to the Council on Medical Education and referred to the Association of American Medical Colleges for consideration.

#### THE QUARTER SYSTEM IN MEDICAL LICENSURE

An investigation by the Council on Medical Education and Hospitals shows that the phraseology of the medical practice laws of the following seventeen states apparently is such as to prevent a student from completing his four medical college years of thirty-two weeks each in three calendar years: Arkansas, Colorado, Connecticut, Delaware, Georgia, Illinois, Indiana, Kansas, Kentucky, Minnesota, Nebraska, New Jersey, New York, North Dakota, Ohio, Pennsylvania and Virginia.

The following thirty-two states have no such legal restrictions regarding the medical course, so that the better grade students are enabled to save a year of time without diminishing either the actual hours of study or the thoroughness with which the instruction is given: Alabama, Arizona, California, District of Columbia, Florida, Idaho, Iowa, Louisiana, Maine, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Mexico, North Carolina, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin and Wyoming.

Under the quarter system in medical colleges, the summer session would be

given as thoroughly as that of any other part of the year and the work of any three consecutive quarters would constitute a college year. It is hoped, therefore, that eventually all state laws may be so modified as to permit medical students to save this year of valuable time if they are physically and educationally able to do so.—*Federation Bulletin*, Nov. 1927.

### TEACHING OF MEDICAL OPHTHALMOLOGY

Teachers of ophthalmology in the medical schools have as their prime object such training as will fit the student for the general practice of medicine. There is a fair uniformity in the courses embracing the anatomy, physiology, and the common diseases of the eye and practical instruction in the use of the ophthalmoscope. But the ocular manifestations of general or organic diseases have assumed increasing importance in recent years and are matters of far more interest to the medical practitioner than the ocular diseases in themselves, or such subjects as ocular operations, etc.

The University of Maryland has, therefore, for a number of years conducted practical courses in medical ophthalmology during the fourth year. These courses are somewhat unique and may interest other teachers of ophthalmology. The instruction is given in sections of one-sixth the entire class; the sections meet with the head of the department of ophthalmology twice weekly in the wards at the two hospitals, the University Hospital and the Mercy Hospital. Each student attends ten meetings. Medical cases, especially such as may present fundal changes or other ocular signs, are selected. The clinical history is reviewed, the eyes are examined by the students, the lesions

are described and discussed in relation to the general or organic disorders. There are always cases for study; renal, diabetic, vascular, cardiac, blood, cerebrospinal, etc. Electric ophthalmoscopes are on hand so that several cases may be studied at the same time.

The students have manifested great interest, as their discussions have shown. The courses have not only impressed the students with the importance of examination of the eye and especially of the fundus, but they have led to more careful and regular ophthalmoscopic examination of every medical case, not only by the internes and resident physicians, but also by the consulting ophthalmologist and the chiefs of the medical service.

The writer is convinced that other teachers of ophthalmology will find instruction of this kind very effective and at the same time enjoyable to teacher and to student.

HARRY FRIEDENWALD.

### REPRESENTATION AT ANNUAL MEETING

It is a matter of interest as to which of the subjects in the curriculum are represented by delegates at the annual meetings. A record has been kept of this for a number of years, and the variation, from year to year, has not been of moment, except that the number of delegates has increased steadily. For instance, a count of the registrations at the Montreal meeting shows that there were 6 college presidents; 2 regents; 5 deans (men who do not teach or practice); 2 executive officers; and 2 deans who are also hospital executives. By subjects: Anatomy, 14; physiology, 6; bacteriology, 2; biochemistry, 4; physics, 1; hygiene and preventive

medicine, 4; pharmacology, 3; psychology, 1; obstetrics, 1; gynecology, 1; ophthalmology, 3; ear, nose and throat, 1; pathology, 9; surgery, 11, and medicine, including pediatrics and nervous and mental diseases, 28. It has more and more become the practice of schools to send more than one representative to these meetings, exercising a sort of rotation, so that the dean is not accompanied by the same faculty members each year. Thus, in time, many of the members of the faculty will have had the opportunity to attend and participate in one of these meetings, and this is bound to result in a better understanding of what the Association is doing and in wider cooperation by medical teachers as a whole rather than by only one person in each school. The dean will, no doubt, find that this will prove to be a great help to him in solving administrative as well as pedagogic problems.

#### DR. CHARLES SUMNER JONES

On November 15, at 3:30 a. m., death came suddenly to Charles Sumner Jones, for many years dean of the medical department of the University of Buffalo. His death came as a great shock to his many friends. To outward appearances, Dr. Jones had been in the best of health and had been actively engaged in the pursuit of his various activities. There was no indication of any illness up to half an hour before death when he was awakened by pains in his chest.

Dr. Jones was a prominent and influential man in the civic, social and educational life of Buffalo. To him is due much of the credit of placing the medical school in the foremost ranks of educational institutions of its kind. He worked hard and unremittingly in the endeavor to achieve his goal. It

may truthfully be said that the end was attained. He was quiet and unobtrusive, but withal forceful and purposeful. He had many friends among those with whom he associated at the meetings of this Association. And he was a good friend and a true one. It was always a pleasure to meet and visit with him. He will be missed but not forgotten.

#### THIRTY-SIX YEARS AGO!

In the *Medical Record*, Dec. 5, 1891, Dr. Wm. Allen Pusey, Chicago, published an article protesting against the lecture system then so much in vogue, even more than now, in medical schools. He said: "Does anyone believe there is a necessity for medical lectures in order that professors may give their students the benefit of their original information? Indeed, is it often that the student needs anything that is not common property of the current medical text books? If original information or superior arrangement of the topic were the condition of the delivery of medical lectures, how many lectures would be given in any of our schools? What teacher is there who has anything to say to his students that has not already been said by himself or somebody else in a better way in a book? \*\*\*\*\*To make the student an active agent in the exchange of ideas between him and his teachers, to make him part of his work, to find out what he knows and to find out what he does not know, to make him do his own thinking—these are the aims at the foundation of approved methods of education.\*\*\*\*\*The crying need of medical education is not a longer period of undergraduate study, but the application to medical teaching of the approved methods of instruction followed in other departments of scientific education."

## College News

**INDIANA UNIVERSITY SCHOOL OF MEDICINE**—The William H. Coleman Hospital for Women, Indianapolis, was formally presented to the University, October 20, by Mr. and Mrs. Wm. H. Coleman as a memorial to their daughter. The cost of the building and equipment exceeded \$350,000. The hospital will be used for teaching purposes by the department of gynecology and obstetrics.

**NEBRASKA BASIC SCIENCE BOARD**—Nebraska has joined Wisconsin, Minnesota and Washington in the creation by legislative enactment of a basic science board which will examine all persons who wish to practice the healing arts in the six basic sciences. The chairman of the board is Dr. Leunis Van Es, head of the department of animal pathology and hygiene, University of Nebraska, Lincoln.

**UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE**—The state legislature has increased the annual appropriation for the entire university, including the medical school, one-third of a million dollars. Therefore, the medical school is adding to its equipment, enlarging its library and buildings, increasing the faculty personnel and reducing the student body numerically.

**UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE**—The following faculty appointments have been announced: Alexander T. Martin has been appointed clinical professor of pediatrics, Emanuel D. Friedman (formerly clinical professor of neurology) has been appointed professor of neurology, Joseph E. Connery has been promoted to assistant pro-

fessor of clinical pathology, Mills Sturtevant has been promoted to clinical professor of medicine.

**UNIVERSITY OF TORONTO FACULTY OF MEDICINE**—New faculty appointments: Lawrence Irving, associate professor of physiology, succeeding Dr. J. M. D. Olmsted who resigned; Dr. Emerson J. Trow, assistant professor of medicine in charge of dermatology, succeeding Dr. David K. Smith; Dr. Malcolm J. Crawford, associate in medical jurisprudence.

**CORNELL UNIVERSITY MEDICAL COLLEGE AND NEW YORK HOSPITAL COMBINE ON EDUCATIONAL PROGRAM**—These two institutions will unite as a single institution to be known as the New York Hospital-Cornell Medical College Association. A building to house the two institutions will be erected, immediately north of the Rockefeller Institute for Medical Research. The hospital will undertake the construction of the main building in July, 1928, at an estimated cost of about \$11,000,000. The faculty and staff will be organized on the university basis, with the important clinical and laboratory departments being manned by full-time teachers and investigators, and by others on part time. The General Education Board has authorized an appropriation of \$7,500,000. When the enterprise is completed, the combined financial position and requirements are estimated at a total of \$60,650,000, of which \$15,000,000 is considered as additional funds required. A joint administrative board representing the university and the hospital will supervise the new institution. The director will be Dr. G. Canby Robinson, at present dean of Vanderbilt University School of Medicine, Nashville, Tenn. His duties will be as follows: executive officer of the joint administration board of the association, and executive officer



of the medical faculty, having general charge of the conduct of the medical school and absorbing the duties now assigned to the dean. In the hospital he will represent the educational and research interests and through the superintendent and other officers will supervise provisions made for education and research; he will, with the aid of the faculty of the medical school, prepare the educational and scientific budget and supervise the administration of this budget; he will be charged with responsibility for co-ordinating the work of the school and the hospital so as to promote effective co-operation in teaching, research and the care of patients.

The following faculty appointments are announced: Dr. Harry J. Deuel, assistant professor of physiology; Dr. McKeen Cattell, assistant professor of physiology; Dr. Byron Stookey, assistant professor of clinical surgery; Dr. Morton C. Kahn, associate in public health and preventive medicine.

**GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF PENNSYLVANIA**—The teaching hospital of this school was opened for the reception of patients, October 23. The hospital includes the new building and the old adjacent buildings known heretofore as Polyclinic Hospital and Diagnostic Hospital.

**UNIVERSITY OF LIEGE**—Dr. Duesberg, professor of anatomy at the Faculté de médecine of Liège, who, during the war, served in the Johns Hopkins Hospital at Baltimore, has been appointed rector of the University of Liège for the period 1927-1930.

**UNIVERSITY OF CHICAGO**—The university has received \$300,000 for the erection and equipment of a building to be known as the Gertrude Dunn Hicks

Memorial which is to be operated as an orthopedic hospital, and \$250,000 to establish an endowment fund to be known as the Louis B. and Emma M. Kuppenheimer Foundation. The income is to be used for teaching and research in the department of ophthalmology.

The Albert Merritt Billings Hospital and the Max Epstein Clinic were opened to patients October 3. Hospital and Out Clinic service will be available in general medicine, surgery, eye, ear, nose and throat, and neurology. The Chicago Lying-In Hospital, affiliated with the University, is being built on the campus. It will provide for obstetric cases. The Charles Gilman Smith Memorial Hospital will care for contagious diseases; the Bobs Roberts Memorial Hospital for children and the Hicks Memorial (see above) for orthopedic surgery.

November 1 and 2 the dedicating exercises for the new medical school were held. For the time being clinical instruction will be continued in Rush Medical College.

**WAKE FOREST COLLEGE**—The school of medicine has received a memorial fund from Mr. George Pennell for the establishment of a medical library. The amount of the fund is not stated but it is said to be sufficiently large to meet all needs of a first class library and its maintenance.

**MEDICAL STUDENTS IN SOUTH AFRICA**—For the current college year the number of medical students is 486, distributed as follows: University of Cape Town, 260; University of Witwatersrande, 213; Grey University, 3, and Transvaal University, 6.

**UNIVERSITY OF MICHIGAN ESTABLISHES DEPARTMENT OF GRADUATE MEDICINE**—



The board of regents of the University of Michigan has authorized the establishment at the university of a department of graduate medicine, and has asked Dr. James D. Bruce to undertake its organization.

**NORTHWESTERN UNIVERSITY MEDICAL SCHOOL**—More than 1,000 applications were received for admission to the freshman class last fall. One hundred and twenty-two were accepted, and of these only five had just the minimum two years of college preparation. Fifty-five had a college degree and one a Ph.D.

**WOMAN'S MEDICAL COLLEGE OF PHILADELPHIA**—The following faculty appointments are announced: Helene C. Wilson, associate in pharmacology; Margaret Sumwalt, associate in physiology; Frances J. Heath, teaching fellow in obstetrics; Cecilia Riegel, instructor in physiologic chemistry; Dorothy E. Bate-man, Colgate Research Fellow in Chemistry; Asta J. Witner, instructor in obstetrics; Ann C. Arthurs, instructor in clinical otolaryngology; Samuel B. Hadden, instructor in clinical neurology; Mary J. McIlvaine, instructor in clinical obstetrics; Coletta A. Bennett, assistant instructor in physiologic chemistry; Clarence K. Dengler, assistant in dermatology; Joseph G. Ross, assistant in clinical medicine; Jean Gowing, assistant in pediatrics.

**HOSPITALS APPROVED FOR INTERN TRAINING AND RESIDENCIES IN SPECIALTIES**—Since its last report on hospitals approved for internships, the Council on Medical Education and Hospitals has approved the following additional hospitals: Orange County Hospital, Orange, Calif.; Pasadena Hospital, Pasadena, Calif.; Stamford Hospital, Stamford, Conn.; Chicago Memorial Hospital, Chi-

cago; Lake View Hospital, Chicago; St. Joseph's Hospital, Joliet, Ill.; Broadlawns, Polk County Public Hospital, Des Moines, Iowa; Southern Baptist Hospital, New Orleans; Trinity Lutheran Hospital, Kansas City, Mo.; Evangelical Deaconess Home and Hospital, St. Louis; St. Frances Hospital, Grand Island, Neb.; Immanuel Deaconess Hospital, Omaha; City Memorial Hospital, Winston-Salem, N. C.; Westmoreland Hospital, Greensburg, Pa.; Harrisburg Polyclinic Hospital, Harrisburg, Pa.; Chestnut Hill Hospital, Philadelphia; Moses Taylor Hospital, Scranton, Pa.; General Public Hospital, St. John, N. B.; St. Martha's Hospital, Antigonish, N. S.

The following additional hospitals have been approved for residencies in specialties: Union Printers' Home and Tuberculosis Sanatorium, Colorado Springs, Colo.; Silver Cross Hospital, Joliet, Ill.

**MCGILL UNIVERSITY**—Laymen have donated \$8,000 to the Faculty of Medicine for four scholarships to be given to prospective medical students, residents of Canada, who wish to study medicine at McGill. The number of new students entering McGill has been limited to 100, preference being given to Canadian students.

**MEDICAL PHYSICS AT UNIVERSITY OF PENNSYLVANIA**—Eldridge R. Johnson, formerly president of the Victor Talking Machine Company, has given \$800,000 to the University of Pennsylvania to establish the Eldridge R. Johnson Foundation for Research in Medical Physics. Not more than \$200,000 of the total will be expended for building and equipment; the income from the balance will be used for the "study and development of physical methods in the in-

vestigation of disease and in its cure; for the study of the important physical agencies or properties such as heat, light, electricity, sound, in their varied relations to the life of man, and to carry out investigations for the improvement of the instrumental applications of such agencies to medical purposes." This gift makes the total in the present campaign for funds thus far \$10,000,000.

**CHILDREN'S HOSPITAL AT ST. PAUL**—This hospital will be completed early next year. It is especially endowed for teaching students from the University of Minnesota Medical School and fellows from the Graduate School and the Mayo Foundation.

**OFFICERS OF ROCKEFELLER FOUNDATION**—Under the new plan of organization, the following are reported to be officers of the Rockefeller Foundation: John D. Rockefeller, Jr., chairman, board of trustees; George E. Vincent, president; Edwin R. Embree, vice president in New York office; Roger S. Greene, vice president in the Far East; Selskar M. Gunn, vice president in Europe; Frederick F. Russell, M. D., director, international health division; Richard M. Pearce, Jr., M. D., director, division of medical education; Norma S. Thompson, secretary; Louis G. Myers, treasurer; George J. Beal, comptroller. The international health division comprises the president, the chairman, Dr. Simon Flexner, Vernon L. Kellogg, Wickliffe Rose and Dr. William Allen White. The division of medical education comprises the president, the chairman and Drs. David L. Edsall, Frederick Strauss, George H. Whipple and Ray Lyman Wilbur.

**UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE**—Dr. Carl S. Williamson has

been appointed head of the department of surgery and Dr. Oliver C. Melson, head of the department of medicine. Both appointees come from the Mayo Clinic.

**STATE UNIVERSITY OF IOWA**—Dr. Henry S. Houghton, late director of the Peking Union Medical College, has been appointed dean of the medical school and director of the university hospitals. He will also do some teaching, but will not practice. Dr. H. L. Beye has been promoted to the headship of the department of surgery; Dr. D. M. Lierle becomes acting head of the department of otolaryngology; Dr. T. P. Brennan assumes the acting headship in the psychopathic service and Dr. H. M. Korns, of Western Reserve University and Lakeside Hospital has accepted the first assistantship to Dr. F. M. Smith. Dr. Albert V. Hardy has been appointed acting head of the department of epidemiology; Dr. Alvin W. Bryan, acting head of the department of psychiatry.

**UNIVERSITY OF TEXAS**—The appointment of Dr. Henry Hartman, professor of pathology, as dean of the school of medicine has been confirmed. He succeeds Dr. Wm. Keiller who resigned more than a year ago.

**MEDICAL COLLEGE OF VIRGINIA**—The college has received approximately \$130,000 for the care of patients at the St. Philip Hospital, a large colored institution, owned and operated by the college for teaching purposes.

Dr. Wm. B. Porter has been appointed professor of medicine; Dr. Sidney S. Negus, professor of chemistry; Dr. J. S. Forbes, assistant professor of chemistry; Dr. Lewis C. Punch, associate in pathology, and J. G. Jantz, associate in anatomy.

The Crippled Children's Hospital now under construction in Richmond will be ready for occupancy about January 1, 1928. This institution will be staffed by the college and used for teaching purposes. Forty-eight beds will be available at the outset. This number will be doubled when necessary.

**YALE UNIVERSITY**—Plans are in readiness for the extension of the Anthony N. Brady Memorial Laboratory to consist of a building 180x240 feet and four stories high. It will house the departments of pathology, bacteriology and surgery, and teaching facilities for the school of nursing.

**SAUERBRUCH GOES TO BERLIN**—Professor Sauerbruch has decided to leave Munich for Berlin, where he will take over the direction of the surgical clinic of the Charité as successor to Professor Hildebrand, who is retiring. A condition of his acceptance of the call was the assurance on the part of the ministry of education that he should take over Professor Bier's clinic on the latter's expected retirement two years from now, and that a new building should be constructed for this clinic.

**CHAIR OF MISSIONARY MEDICINE**—Following the example of the Universities of Wurzburg, Louvaine and Lille, the University of Fribourg, Switzerland, has founded a chair of medicine for missionaries. Dr. Machon of Lausanne, whose competence in the matter is without question, has been called to fill this professorship.

**VANDERBILT UNIVERSITY SCHOOL OF MEDICINE**—The following faculty appointments are announced: John B. Youmans, of the University of Michigan Medical School, assistant professor

of medicine; Alvin E. Keller, instructor in preventive medicine; Henry E. Meloney, associate professor of preventive medicine; Herbert S. Wells, instructor in pharmacology, and Charles E. Woodruff, instructor in pathology.

**UNIVERSITY OF WISCONSIN MEDICAL SCHOOL**—Dr. Elmer L. Sevringhaus has been transferred from associate professor of physiologic chemistry to associate professor of medicine and associate physician to the Wisconsin General Hospital, Madison, and Edgar J. Witzemann, Ph.D., formerly of the Mayo Clinic, has been appointed assistant professor of physiologic chemistry to succeed Dr. Sevringhaus.

**UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE**—Beginning with the session of 1928-1929, the requirement for admission will be ninety semester hours. The specific subject requirements will remain as now. Six hours of English is included in the underclassman requirement of the College of Arts, which is included as a part of the requirement for admission to the School of Medicine.

**BOSTON UNIVERSITY SCHOOL OF MEDICINE**—Faculty appointments: Martin F. Crotty, obstetrics; Sidney C. Dalrymple, pathology; Frank L. Jones, laryngology; William L. Krieger, medicine; George Levene, radiology; Charles H. Merrill, otology; Charles E. Montague, medicine; Leroy E. Parkins, diseases of the chest; Harold W. Ripley, otology, and Ernest Springer, surgery.

**ROCKEFELLER FOUNDATION AIDS FRENCH MEDICAL SCHOOL**—It is reported that the Rockefeller Foundation gave \$1,640,000 to the medical school of the University of Lyon.

UNIVERSITY OF CHICAGO—The Graduate School of Medicine of the Ogden Graduate School of Science has adopted a new curriculum, in the nature of an experiment, approved by the Executive Council of this Association, which calls for a total of 3,888 hours of which 33 per cent may be devoted to electives. The Association requirement provides for not to exceed 24 per cent of electives. This greater freedom of election is combined with a higher requirement for admission—the baccalaureate degree; thus placing the medical work on a graduate basis. Students are encouraged to study anatomy, physiology, biochemistry and bacteriology in college and this is being done to an increasing extent. This permits of the substitution for them of elective work in the medical school. The completion of a sound and creditable piece of research is required as a condition of the award of the degree of Doctor of Medicine.

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#### PERSONALS

Dr. Irving S. Cutter, dean Northwestern University Medical School, was elected national president of the Phi Rho Sigma Medical Fraternity at the fifteenth biennial convention.

Dr. Louis B. Wilson, director of the Mayo Foundation, has been elected an honorary member of the Czech Medical Society of Prague.

Dr. Carl Ten Broeck, professor of bacteriology at Peking Union Medical College, China, was elected a member of the board of scientific directors of the Rockefeller Institute for Medical Research.

Dr. Charles F. Martin, president-elect of the American College of Physicians and dean of the Faculty of Medicine,

McGill University, was the recipient of the degree of L.L.D. from Queen's University, Kingston, Ontario, in October.

Dr. John Wyckoff has been appointed associate professor of medicine at the University and Bellevue Hospital Medical College. Dr. Wyckoff was formerly clinical professor of medicine.

Dr. Guy W. Clark, assistant professor of pharmacology in the University of California Medical School, has resigned to enter a commercial field.

Dr. Frederick H. Howard, of Williams College, has been appointed professor of physiology at the College of Physicians and Surgeons, Columbia University.

Dr. Donald Mainland, of Edinburgh University, has accepted an assistant professorship in anatomy in the medical school of Manitoba University, Winnipeg, succeeding Dr. Tudor Jones.

Dr. Isaac A. Abt, professor of pediatrics in Northwestern University Medical School, was awarded the Cross of the Legion of Honor by the French government.

Dr. Richard H. Meade, of Richmond, Va., has been appointed assistant professor of surgery in the University of Virginia School of Medicine.

Dr. Theodore Koppanyi, formerly of the University of Chicago, has accepted an assistant professorship in pharmacology in Syracuse University College of Medicine.

Dr. Virgil H. Moon, of the Indiana University School of Medicine, has been appointed professor of pathology in Jefferson Medical College.

Dr. Jacob E. Thomas, formerly with the West Virginia University School of Medicine, was appointed professor of physiology in Jefferson Medical College.

Dr. George Caldwell and Dr. J. A. Caldwell of the department of pathology, Baylor University College of Medicine, have resigned to go into hospital work.

Dr. Arthur D. Bush, professor of pharmacology, Emory University School of Medicine, has retired because of ill health.

Dr. Harry F. Wilkinson, Mayo Clinic, has been appointed assistant professor of surgery (otolaryngology) at the medical school of the University of Chicago.

Dr. Phillips F. Greene has been appointed associate professor of surgery at the University of Wisconsin Medical School.

Dr. G. Carl Huber has been appointed dean of the Graduate School of the University of Michigan to succeed the late A. H. Lloyd.

Dr. B. C. L. Miller, Medical College of Virginia, supervised the revision of the fourteenth edition of the American Illustrated Medical Dictionary.

Dr. W. Mansfield Clark of the Hygienic Laboratory of the U. S. Public Health Service, has been appointed professor of physiological chemistry in the Johns Hopkins University School of Medicine.

Dr. F. L. Kelly, assistant professor of public health administration and lecturer in preventive medicine at the University of California, has been appointed director of public health for Oakland.

Dr. Lawrence Irving of Stanford University has been appointed associate professor of physiology in Toronto University.

Robert Howden, for thirty-eight years professor of anatomy at the College of Medicine, Newcastle-upon-Tyne (University of Durham), has resigned and been elected emeritus professor; Dr.

Howden is the editor of Gray's Anatomy, the twenty-third edition of which was recently published; he has been the representative of the University of Durham on the medical council since 1918.

Dr. Ralph P. Smith has been appointed professor of pathology in Dalhousie University, Halifax, N. S., and pathologist to the Victoria General Hospital.

Dr. Howard T. Karsner, professor of pathology, Western Reserve University, has been appointed chairman of the division of medical sciences of the National Research Council for one year.

Dr. Sven Ingvar, instructor in neurology at the University of Lund, will lecture at the Johns Hopkins University for one year.

Sir Archibald Garrod has resigned as Regius professor of medicine at Oxford University. He succeeded Sir William Osler in 1920.

Dr. Louis E. Phaneuf has been appointed professor of gynecology by Tufts Medical College, Boston.

Dr. S. Tashiro of the University of Cincinnati, accompanied by Dr. Gustave Eckstein, has been visiting his native land. From the same university, Dr. Martin H. Fischer has also gone to Tokyo to deliver lectures at different local universities.

Dr. Isadore D. Bronfin, Denver, has been appointed assistant professor of medicine in the University of Colorado School of Medicine.

Dr. Jacob Markowitz, of Toronto, has been appointed first assistant in the division of experimental surgery and pathology in the Mayo Foundation.

Dr. Harry V. Judge, Albany, has been appointed acting head of the department of ophthalmology of the Albany Medical College.

## Abstracts of Current Literature

### AUTOPSY

Howard T. Karsner defines the word autopsy as meaning a postmortem examination of the body to determine the pathologic processes present, in their relation to clinical phenomena and history, their interest for the surviving relatives, their importance to the community as a whole, and their value in study of the cause, processes and nature of disease. The autopsy being a scientific inquiry, the record, both verbal and pictorial, should be objective, accurate and complete. It should cover not only those structures which are the seat of obvious alteration, but all the organs of the body, because the presence of certain normal viscera is often quite as significant as the presence of those which are diseased. Gross examination should be amplified by microscopic studies and such other investigations as may be indicated. The modern autopsy is the culmination of advances made through many centuries, and various sciences have contributed to its development. In a discussion of legal restrictions, Karsner says that since the law compels the physician to give a certificate of the cause of death, in the absence of other law to the contrary, it presupposes that the physician has the right to take necessary measures to ascertain that cause. If the intent of the law concerning the furnishing of death certificates did not include the autopsy as the only means for determining the exact cause of death, such intent could be made clear by a revised statute. With due respect for educational, sociological and other agencies supported for the welfare of the state, the education

of its physicians is of outstanding importance. The performance of autopsies, together with a correlation of their results with the clinical examinations, is one of the most significant features of the education of physicians in their undergraduate and graduate periods. Obstacles now existing may all be overcome by education—education of the physician, the nurse, the clergyman, the undertaker and the public, concerning the value of the autopsy, and education of the pathologist concerning his high duty to medicine and his obligations to relatives, undertaker and the public. The autopsy is of unquestioned value in the training of medical students and in the further education of the physician. The autopsy serves not only to train the student in gross morbid anatomy, but also by proper correlation leads him to an evaluation of methods of clinical diagnosis. He may learn to have dependence on certain methods which yield dependable results as revealed by the autopsy, and he may learn to suspect methods which prove on postmortem examination to be misleading. The latter lesson is especially important when it leads to improvement of diagnostic procedures. The performance and recording of an autopsy are in themselves of value, but this is augmented materially if the pathologist, with a knowledge of the clinical features, and the clinician, in the light of the autopsy data, enter into conference, with a mutual desire to be helpful and to analyze the features of the case with a logical consideration of etiology, diagnosis and treatment. Clinical medicine is ever striving toward improvement of diagnostic methods. The criterion of such improvement is to be found in the autopsy, which should be utilized continuously for the evaluation of success or failure. The autopsy should serve not only to point out errors, but



also to show successful diagnosis. Thus, fallacious methods of diagnosis may be subjected to more critical examination and satisfactory methods used as a basis for further improvement. The interest of the autopsy to the surviving relatives is in a certain sense a corollary of the discussion of accurate diagnosis. The intelligent public can be educated to understand its duty to the common good. To others, it may be necessary to point to reasons which affect them individually. Thus, it is of importance to every member of a family to know exactly what caused the death of his relatives. This is emphasized in the family histories obtained in every thorough medical examination. If there be a heritable disease, it should be known. Even if this be not the case, it may be that the disease is in part dependent on some habit of life, which can be avoided by the survivors. Many fatal diseases, acute or chronic, are directly or indirectly attributable to infection. If the survivor has suffered from the same infection, his life may be so directed as to prevent or delay the subsequent serious manifestations. The discovery of the cause of infectious and other types of disease hinges on the use of the autopsy method of investigation. The clinician should realize that the benefit to be derived from the autopsy rests in large part on the clinical investigation of the case and on complete, accurate records. He must understand that the sooner after death the autopsy takes place, the most satisfactory it is. He must also know that even if delayed, the results of the autopsy may still yield useful information. Experienced pathologists have made post-mortem examinations of embalmed bodies months after death and burial, and have been able to make diagnoses of value in medicolegal and insurance cases. The conditions found have also served to aid

in the correlation of the clinical and pathologic features. The pathologist should be so skilled in the method of the autopsy that the clinician will be able to reassure relatives as to the repair of the body. In addition to training in method, the pathologist should be familiar with gross anatomic diagnosis and alert to apply any additional histologic, bacteriologic, chemical or other method which will help to clarify the case. He must fully realize that only so far as his records are complete and accurate will his labors have permanent value. His record should be a word picture of the conditions found, and if necessary should be amplified by drawings, photographs and that three dimensional picture, the museum specimen. His autopsy room, equipment and personnel should be such that the autopsy may be well done. His attitude should be that of the investigator approaching his material, not only with a scientific curiosity, but with a respect for the human sensibilities of all concerned. Furthermore, chemical and immunologic examinations may yield information of importance. He should cooperate with the undertaker so that the latter may do his work satisfactorily. He should repair the body with the utmost care, and keep ever in mind that in most instances his subject is the earthly shell of a life and spirit lived by one or many. He is the trusted representative of the medical profession, and should operate with a full sense of his responsibility to the profession and its future success, and to the good will of the public.—*Jour. A. M. A.*, April 30, 1927.

#### TEACHING OF CLINICAL WORK TO UNDERGRADUATE

Evarts A. Graham is of the opinion that the central point around which the clinical education should be constructed



must be the patient. There cannot be a substitute for the patient. Animals, charts or lantern slides can serve as useful adjuncts, but they can never serve as substitutes for actual contact with patients. In order to carry out a sufficiently intensive and permanent contact with patients, the English system of clinical clerkships and dresserships is the best scheme yet devised. It is the outstanding contribution of England to methods of medical education, and its use is an absolute necessity in any modern medical school. Clinical lectures, demonstrations, ward rounds, amphitheater clinics and outpatient work are all valuable if properly conducted, but they are of little significance in comparison with the student's daily contact with the same group of patients over a period of several weeks or months, in the capacity almost of attending physician or surgeon to his patients. If a student sees a patient on admission, when the diagnosis is of paramount importance, takes his history, makes an examination, watches him through the progress of the case, participates in the operation, if there is one, and sees him go on to recovery or death, and finally, if death occurs, sees and examines the organs disclosing their secrets at autopsy, he is stimulated to a degree beyond any that comes from clinical demonstrations or formal clinics. During this time he has made certain special laboratory examinations, and he is able to see for himself the uses and limitations of these procedures. He has seen and talked with the patient's family; he has even been admitted into the family secrets, and he has learned much of how social and economic problems can affect disease. He has learned also much about the psychology of the sick, their fears, their worries and their attitudes toward physicians. It has been usual to institute the ward clerkships in the

fourth year; but in at least two medical schools, Yale and Vanderbilt, a change has been made whereby the ward work is given to the third year students, and the outpatient work to those of the fourth year. The same change will probably be carried out at Washington University in the near future. It has much to commend it. Patients in the wards usually represent the more obvious stages of disease, and there is present every possible facility for their examination and treatment. These are the patients, therefore, whose conditions are more easily understood by the beginner in clinical work. By contrast, the outpatients often present early and less obvious signs of disease, and their diagnostic and therapeutic problems are often more difficult; they also more nearly resemble the patients whom a young practitioner will see. These are the patients, therefore, who should be studied by the more advanced students. To carry out the scheme of ward clerkships it is essential that an adequate number of patients be available. One or two anachronisms of surgical teaching suggest themselves. Probably the most useless survivor of a bygone age is the amphitheater operative surgical clinic. Another old relic of questionable value which still holds its ground in some medical schools is the required course of so-called operative surgery on the cadaver, during which students are taught to ligate arteries which they will probably never have to ligate in practice, to perform amputations, many of which are obsolete, under conditions that can never be made to resemble those in a living body; to repair imaginary hernias and to do other various kinds of stunts which are really exercises in anatomy and are not surgery at all. How much better it would be for most of the students to spend their time at something more useful. If some sort of a course

in operative surgery must be given to satisfy the foolish requirements of boards of licensure, it should at least be conducted on living tissues, for which purpose anesthetized dogs are very useful. Clinical surgery nowadays is much more than applied anatomy. The teaching of surgery, therefore, should be conducted in such a way as to show how it rests on the foundation of these other sciences. The student should be made to realize that just as the foundation grows in breadth and depth, so the superstructure of clinical surgery is permitted to grow and extend, but that without a solid foundation the superstructure will not stand but will fall. The eager and intelligent student, especially the one who desires to enter the specialty of surgery, will desire not only to familiarize himself with the foundations, but also to add his share to the broadening and deepening of these foundations, or to the erection of a greater building on top of the foundations extended by others. Thus will come research, and it matters little whether the clinician shall carry out his research in the laboratory or in the ward. A fundamental distinction does not exist between so-called laboratory research and so-called clinical research. The two have the same result, the improvement of the welfare of humanity which is the sole purpose of the science and art of medicine.—*Jour. A. M. A.*, April 30, 1927.

#### SPECIALISM IN MEDICINE IN 1883

In his introductory address to the students, delivered on the occasion of the opening of the Manitoba Medical College in 1883, Dr. James Kerr, the dean, said:

"It has become of late years very much the fashion for the practice of medicine to run towards specialties, and it is my

duty to warn you against taking up this study too early in your career. The more general your knowledge of disease, the more thoroughly you have become acquainted with the principles of every means of physical diagnosis, the better qualified you will be to undertake any special department of practice. You must first be general practitioners before you can become successful specialists. It is important to realize that you cannot attain success in the special departments of ophthalmology, otology and gynecology, mental and nervous diseases, without first having become familiar with all the manifestations of disease in the other organs. Above all things, as you hope to master scientific medicine and practice it successfully afterwards, do not make short work of your anatomy and physiology. Without being thoroughly acquainted with the complex structures and functions of the healthy human economy, any effort to treat these diseases must result in bewilderment, failure and disappointment."—*Manitoba Med. Bull.*, April, 1927.

#### UNDERGRADUATE INSTRUCTION IN ROENTGENOLOGY

Medical colleges must, and will soon, be forced by circumstances to pay more and more attention to the instruction of the undergraduate in roentgenology. The following method of instruction is now in force at the Emory University Medical Department: The students are taken as Juniors, as it is at this time they begin work on the out-patient clinic and on the wards. They receive a weekly lecture during the entire year, which is designed to cover comprehensively the subject of roentgen-ray. This starts with the development of roentgen-ray apparatus, including the use of electrical currents, transformers, rheostats, etc. Op-

portunity is afforded of examining the different apparatus in this department. The lectures progress weekly, covering the entire body, its different tracts, and the more frequent and more easily diagnosed lesions. This class is divided into four sections. Each section has an hour a week in the clinical laboratory, where interpretation of the films is taught. This scheme of operation permits each Junior student to receive approximately 30 hours of lectures covering the subject of roentgen-ray, and also 20 hours of clinical review of the films. In the Senior year the students, in groups of five to seven, receive 5 hours clinical instruction, during which time the cases they are working up are reviewed from the roentgen-ray standpoint.—CLARK, J. J.: *Radiology*, May, 1927.

#### THERAPEUTICS IN PREMEDICAL EDUCATION

There is no doubt to any close student of medical education that the introduction of the two premedical years has proven a great benefit to the training of medical men. Warthin strikes the keynote when he says that the premedical student is thrown in with large classes of literary students where courses are "more or less popular and superficial, containing much duplicated matter of elementary physiology and morphology, and a smattering of heredity, evolution, genitics, and vitamins. . . . They do not give the medical student that broad conception of the unity of all life, the broader view of the evolution of plant and animal life, and of man in particular." Physics is often given to medical students along with engineering students with emphasis placed upon stress and strain, and little said concerning light, heat, radio-activity, and electricity. Often the modern language

courses do not include conversational and scientific courses available to medical students. A course in reading current medical periodicals in either French or German is not existent, as far as I know, and yet think of the benefit it would have! Few premedical students take sociology, ethnology, art, or music. Anthropology is rarely studied and yet the whole medical science is based on the history of man! Physicians, too, are told they must consider themselves leaders in their community; they must preside at banquets, and be active in their societies, yet it is the rare doctor who has had even a rudimentary training in public speaking. It has been said that a majority of men entering upon the study of medicine have had that desire since their earliest recollection. When they enter college they are confronted with certain requirements which they must pass before entering their chosen field. No committee meets them and points out certain studies which may benefit them as they go along. They may peruse their catalogue for electives and come upon such terms as Sociology 21, but they are unaware such a course is Anthropology. Because they early commit themselves to medicine, few instructors try to interest them in other subjects. They even pass through the entire two years of premedical work without so much as a trace of pure medical science to interest them. It is a much mooted question whether the premedical education should be only in the humanities or should act as a period during which the foundation is laid for the work to come. Would it not be better to strike a happy medium so that both the humanities and the fundamentals are gained? Would not a committee acting as advisors to all premedical students be a decided help in planning courses for them? Let this group keep in touch

with premedical students and direct them. Perhaps by supervision, such a body might be able to direct the misfits, who invariably come into medicine, along other more suitable channels, before their mistake is serious. Cannot some of the literary courses be rearranged so that they have a definite appeal and a decided value to premedical students? Investigate such studies as biophysics, embryology, the reading of periodicals in a modern language, and stress ethnology, anthropology, and public speaking. Remove the non-essential courses such as qualitative analysis or incorporate it as part of general chemistry, and allow this time for other subjects. Bring forward into the premedical years perhaps bacteriology and the history of medicine. In other words, revise and combine the premedical and early medical education.

—CURTIS, A. C.: *Mich. State M. S. J.*, May, 1927.

#### PHYSICIANS AND PHILOSOPHICAL STUDIES IN ENGLAND

A joint letter over the names of leading men in the profession—Lord Dawson of Penn, Sir Thomas Horder, Sir Henry Head, T. W. Mitchell, William Brown and H. Crichton-Miller—appears in the medical press advocating philosophical studies for physicians. The signatories point out that there is evidence that what are termed generally philosophic studies would be of advantage to many physicians, both by expanding and by defining their outlook in relation to general or individual experiences and by affording assistance in the solution of practical difficulties. The need for clear thinking was never more apparent than it is today, when our expanded range of knowledge adds constantly to a stock of exact information, the bearings of which cannot

be confined to any one branch of science but make themselves felt in every field. "What is it all about?" is a question that every well informed man asks himself when a mental problem, perhaps with a direct reference to action, presents itself to him in a form that is not dictated by his particular equipment. And the better informed he is, the more clear will it be to him that he needs fundamental guidance. In other words, he desires help in clear thinking. The recently formed British Institute of Philosophical Studies exists in order to afford this help to those who need it. The general object of the institute is "to bring leading exponents of various branches of philosophy into direct contact with the general public with the purpose of satisfying a need, felt by many men and women in every walk of life, for greater clearness and comprehensiveness of vision in human affairs." The signatories say that medical men and women are meeting many difficulties that are arising through the vast development of their science—developments of knowledge, or technic and of administration; these are being accompanied by a broadening of view in their ranks, and also by a multiplication of the relations of medicine to society brought about by far-reaching changes in the law. The position must therefore often arise when physicians need clearness and comprehensiveness of vision. They would benefit by an opportunity of taking counsel with those in other sections of activity, who may be meeting their own problems from a different angle or who may be able to give an opinion on medical problems which gains in breadth and public influence through its detachment from medicine. Further, medicine by co-operation can confer on those other sections of activity the advantages of sharing consid-

ered medical opinion and of learning the arguments relied on for its establishment. Sociological and psychologic questions arise constantly out of all medical practice and not only out of those sides of medical practice apparently concerned with mental disease or moral conduct, while metaphysics must play a part in any comprehensive attempt to distinguish between normal or abnormal conditions, physical or mental—indeed, between health and disease. A general philosophical equipment will be of great use to the practitioner as a supplement to all scientific knowledge, for it will conduce to clear thinking. The signatories, therefore, advocate the claims, on members of the profession, of the British Institute of Philosophical Studies.—*Jour. Am. Med. Assn.*, May 21, 1927.

#### UNDERGRADUATE COURSE IN ROENTGENOLOGY

A proper course of instruction in roentgenology for the undergraduate will have the following desiderata: 1. A presentation of the physics of the roentgen ray, not in detail but sufficiently to give him a good idea of the whys and wherefores of what is to follow, an exposition of the fundamentals of the electrical and mechanical requisites for the production of the roentgen rays, and demonstrations of films, exposures, and fluoroscope. 2. Instruction in roentgen-ray diagnosis so designed as to give the student an appreciation of the roentgen-ray shadow values on film and fluoroscope in the normal and pathologic tissues as applied in the various specialties in medicine and surgery. 3. Informative instruction in a general way with regard to the therapeutic values of the roentgen ray in the treatment of disease, superficial and deep. 4. The giving of all this instruction prior to the

time that the student is to apply it in his clinical studies, that is, his senior year. The amount of time that should be allotted to the instruction in roentgenology ought to be at least one hour per week in the preliminary or technical phases for one school semester, that is, a half-year, two hours per week for one year in the diagnostic phases, and one hour per week for one semester for the therapeutic phases. In this plan a total of about 100 teaching hours will be given, which will prove amply sufficient to properly present the subject to the undergraduate.—BLAINE, E. S.: *Radiology*, May, 1927.

#### MEDICAL CURRICULUM IN CANADA

The inordinate length of the curriculum of study is due mainly to two factors. First, the larger field which must be covered in the study of the basic sciences due to modern progress in science, and second, the much greater application of the scientific method in the treatment of disease. Hence the necessity for lengthening the time both in the primary and in the final years. If these arguments are sound then, once more we may advocate the teaching of the basic sciences in water-tight compartments without any attempt at clinical application. The basic sciences should be taught in such fashion that the student can apply the methods of physiology and anatomy, etc., at the bedside. As Billroth says, the application later is acquired "with little effort." The main thing is to see to it that the training in science is sound and adequate. Our graduate of today has not only laid a sound foundation by his training in the basic sciences but having, early in his course, acquired the scientific method, he is able to apply the methods of scientific investigation at

the bedside in the elucidations of the problems of disease. Furthermore, as he goes out into practice, he is capable of applying the advances of science in his daily routine of practice. The product of our present day curriculum is a tremendous asset to the profession of medicine. An individual practitioner may not initiate any particular advance in the treatment of disease, but in virtue of his training in science, he has the necessary receptivity which permits him to understand, and to incorporate in his practice, the discoveries and advances made by others. — PRIMROSE, A., *Canadian Med. Assoc. Jour.*, May, 1927.

### COURSE IN PROFESSIONAL CONDUCT

An elective course in professional conduct was first given at Washington University School of Medicine four years ago to the fourth year students. The outline of this course is as follows:

#### LECTURE I

##### 1. GENERAL CONSIDERATIONS.

- A. Brief discussion of the A. M. A. "Principles of Medical Ethics."
- B. Plight of the insignificant recent graduate.
- C. Essential division of the profession into practitioners and investigators.
- D. Present status of the general practitioner.
- E. Definition of specialist.
- F. Profession not really crowded. Urban and country practice.

##### 2. ACQUIRING PRACTICE PROPERLY.

- A. Honesty. Industry. Correct use of the English language. Medical "salesmanship."
- B. Laymen's standards of judging a physician in advance.
- C. "Legitimate" advertising.

#### LECTURE II

##### 1. ACQUIRING PRACTICE IMPROPERLY.

- A. "Illegitimate" advertising.
- B. Undue optimism and "alarmism."

##### 2. GROUP PRACTICE.

##### 3. STARTING AS ASSISTANT TO BUSY PRACTITIONER.

- A. Advantages and disadvantages.

##### 4. PROPER ATTITUDE OF A DOCTOR TOWARD HIS WORK. (How to keep patients.)

- A. Honesty, industry, precision, punctuality.
- B. Necessity for keeping written records.
- C. Readiness to call a consultation.

##### 5. COPING WITH SUCCESS.

- A. Difficulty of handling a large practice without overwork.
- B. Limiting practice. Night work, etc.

#### LECTURE III

##### 1. MEDICAL FINANCE.

- A. Medical plight of the "genteel" middle classes.
- B. Determining fair charge for services.
- C. Coping with patients' "shopping" to learn size of fees for comparison with those of other doctors.
- D. Difficult collections.
- E. Patients who should be treated free.
- F. Fee-splitting and why it is wrong.
- G. Need of malpractice insurance.

##### 2. RELATION BETWEEN PHYSICIANS AND OTHER PHYSICIANS.

- A. Functions of medical societies.
- B. Manner of recommending specialists.
- C. Consultations.

#### LECTURE IV

##### 1. ATTENDING PATIENTS OF ANOTHER PHYSICIAN.

- A. When the other physician is away or sick.
- B. When the other physician has been dismissed.



2. PUBLIC HEALTH WORK.
3. HOSPITAL STAFF POSITIONS.
4. DOCTOR AND NURSE.
5. DOCTOR AND DRUGGIST.
6. SALARY-POSITIONS.
7. RAILROAD, INSURANCE, FACTORY WORK.

## LECTURE V

## 1. QUACKS AND CULTS.

- A. Why they exist.
- B. Damage they do.
- C. What to do about them.
- D. "Near-quackish" practices of the medical profession itself, such as unwarranted glandular, electric, intravenous therapy employed for effect.

## 2. EUGENICS.

## 3. EUTHANASIA.

## 4. BIRTH CONTROL.

## LECTURE VI

*"Problems of the Surgeon"*

This lecture is given by Dr. Malvern B. Clopton, assistant professor of clinical surgery.

## SUGGESTED READING

- A. Trades and Professions. G. H. Palmer.
  - B. *Aequanimitas* and Other Addresses. William Osler.
  - C. Doctor and Patient. S. Weir Mitchell.
  - D. The Young Practitioner. O. W. Holmes.
  - E. Oath of Hippocrates.
  - F. Life of Trudeau.
  - G. Life of Pasteur. R. Vallery-Radot.
  - H. Microbe Hunters. Paul DeKruif.
- WHITE, PARK J.: *Jour. Am. Med. Assn.*, May 28, 1927.

## EDUCATION OF PHYSICIANS

The first essential in the education of a student for success in the medical profession is a good knowledge of the language with which he is called upon to express himself. Then, aside from such

cultural studies as literature, history, and foreign language, the need for thorough knowledge of some physics, much chemistry, and the fundamentals of zoology, is imperative. Those subjects should be mastered by the good students, insofar as prospective medical students need them, not later than the end of the junior year in college. The preclinical subjects, such as bacteriology, anatomy, physiology, biochemistry, are studies, I think we may all agree, which should be taught to intending physicians with the utmost thoroughness, and no student should be permitted to go on to his clinical years until he has mastered them; they are absolutely fundamental to his success as a scientific physician. They should be taught as sciences, not as collections of facts. I incline strongly to the belief that they can be taught a great deal better in the atmosphere of a medical school which occupies an isolated position away from a university, no matter how excellent the medical school may be. The teaching of these fundamentals alongside the clinical activities would doubtless be of some benefit to the clinics, but will the near presence of the clinics help vitality in the study of these fundamental subjects? It is important, in my opinion, that students of these fundamentals should be immersed in the atmosphere of scholarship, rather than in that of the art and the practice of medicine. The activities of the clinical years are different in their nature, but it would be well if they too could enjoy the advantages of the general university atmosphere. The geographical attachment of the preclinical and the clinical services to the University has the advantage that the students may learn something of the nature and methods and purpose of research in medical science; of efforts, for example, to discover, and understand better, the func-



tions of all the many parts of the human body, even though the medical students may not, in the great majority of cases, find time or have the special ability to engage usefully in research. However, those students who have, or may develop the worthy ambition to engage in this superlatively important activity, may remain in this work, or return to it after acquiring their degrees.—W. W. CAMPBELL: *California and Western Medicine*: 27: 37 (July) 1927.

#### PREVENTIVE MEDICINE IN STUDENT HEALTH SERVICE

Diehl states that the cost of an adequate student health program in a large university is from ten dollars to fifteen dollars per year per student. The funds to make up the budget may be obtained from several sources: general university funds, health fees, charges to individual students. The organization and relationships of the Student Health Service of the University of Minnesota are presented in chart form. The various phases of a complete student health program are: physical examinations, entrance, periodic and special; outpatient medical service; vaccinations; control of contagious diseases; mental hygiene; nutrition service; infirmary and hospital service; sanitation; dental service; refractions; laboratory and roentgen-ray service; pharmacy and physiotherapy. The co-operation of the student body and faculty is necessary for the carrying out of an effective health program. The clinical staff of the student health service must be competent to render first class medical service and must have the preventive point of view.—DIEHL, H. S.: *Jour. Preventive Med.*, 1: 390 (May) 1927.

#### TEACHING ORTHOPEDIC SURGERY

It has been stated to me by men who have been out of the school for some years that what they were taught in a course of orthopedic surgery and what they could read in orthopedic textbooks did not take in the most important conditions that they meet in practice. It has also been stated that the emphasis of the subjects taught was not in proportion to the occurrence in practice. It has often been brought to my attention by groups of practitioners, not only from their statements, but from observation of their work, that they have no fundamental knowledge of the examination of joints. Properly speaking, the subject should be taught in the course of physical diagnosis, but my observation of the usual course is that it is closely associated with the department of internal medicine, is principally confined to the chest and abdomen, and, in a lesser way, to the general nervous system. Ability to make and chart out a proper physical examination of a joint has not been emphasized sufficiently in certain schools. I personally believe that it should be made a part of the course in physical diagnosis which is commonly given in the second year. In such a course the chief emphasis is placed on certain principles that might be formulated as follows: first, on physical diagnosis and physical examination; second, on constant review of the anatomy of bones and joints, especially as regards function; third, on the effect of disease and injuries.

In considering what should be taught, it is also necessary to place greatest emphasis on the conditions that are most commonly met.

In regard to the teaching of such subjects as lateral curvature, both structural and postural, if we follow our textbooks, we will be teaching the details of the very complicated care and treatment of structural lateral curvature, the details of gymnastic work, all of which have no interest for the general man, and never will be used by him. The only good it will do will be to let him have a knowledge of what can be done. It is better to consider where these men are going to get such subjects as lateral curvature and poor posture, and then present our teaching on that principle. Especially since the advent of industrial medicine and the compensation laws it is quite necessary to deal with the question of so-called back strain, injuries, and disease. It is probably more important to teach undergraduates this subject than it is to teach too much on tuberculosis of the spine. The proportion of one to the other must be as much as one hundred to one. Therefore, a good deal more emphasis must be placed on this subject. In regard to teaching infantile paralysis, the emphasis should be placed on the effect of paralysis on any given group of muscles or joints. There is a tendency in present-day teaching to omit the didactic lecture. It would be a good thing, if it were possible, to substitute for this lecture sufficient reading of textbooks so as to give a background for the course, but I do not believe it is practical for undergraduates. In this lecture there should be a general survey or outline of a given subject on which they can pin their knowledge obtained by reading. To a certain extent the lectures should be a synopsis of certain conditions that affect a particular joint. I am inclined to condense the lectures on tuberculosis of joints, even to give

them simply headings or a synopsis of a lecture, because it is very fully written in a textbook so that they can obtain their knowledge by reading, and because the importance of the subject as far as frequency is concerned is out of proportion to practice. The clinical lecture is the most valuable as well as the best liked method of teaching, but again it is necessary to keep close to fundamental principles of teaching.

There is always a tendency to parade before a class operations, operative results, and spectacular effects. It is very necessary that they be drilled in such things as loss of motion, muscle spasm, line of deformity, and actual and apparent shortening. Then naturally will follow a discussion of diagnosis and treatment which will be based on actual facts already obtained. It seems to me that a very important part of our teaching comes in what we call case teaching. Section work consists of a limited number of exercises of small groups using actual cases as a basis.—MARK H. ROGERS. *J. Bone & Joint Surgery*. 9:421 (July) 1927.

#### MEDICAL RESEARCH AND ITS ORGANIZATION

The interest awakened in the literature of Greece and Rome was shown in the admiration not only for the works of poets, historians and orators, but also for those of physicians, anatomists and astronomers. In consequence, scientific investigation was almost wholly restricted to the study of the writings of authors like Aristotle, Hippocrates, Ptolemy and Galen, and it became the highest ambition to explain and comment upon their teachings, almost an impiety to question them. Independent inquiry and the direct appeal to nature were thus

discouraged, and indeed looked upon with the utmost distrust if their results ran counter to what was found in the works of Aristotle and Galen. It is not without significance for us that it was the anatomists of the sixteenth century who broke with tradition and determined to examine the human body for themselves, and it was owing chiefly to the labors of two independent geniuses, contemporaries for a time at the University of Padua, Galileo and Harvey, working in very different spheres, that the old order was overthrown and a new era inaugurated. For medicine as well as for the physical sciences these two men were of supreme importance.

From Harvey's discovery of the movements of the heart and blood vessels dates not only the science of physiology, but that of medicine itself. It has been well said that this great discovery stands to medical practice much in the same relation as the discovery of the mariner's compass stands to navigation. Harvey's epochal book was published in 1628. It seems probable that he began teaching his doctrines to his classes as early as 1616—the year of Shakespeare's death. For more than ten years, Harvey delayed any formal publication of his experiments and deductions, meanwhile inviting criticism and opposition to his views from all sources, in order that the complete truth, free from any falsities and misconceptions, might be disclosed. Today, as it did then, his modest treatise stands as a landmark in human history, and a perusal of the methods of experiment employed and the mode of presentation adopted arouses feelings only of admiration and emulation. The fundamental thesis of Harvey's teaching is expressed in almost winged words by a modern physiologist—Starling: that only by

searching out and studying the secrets of nature by way of experiments can we hope to attain, in the words of Job, "to a comprehension of the wisdom of the body and the understanding of the heart," and thereby gain that mastery of disease and pain which will enable us to relieve the burden of mankind.

The announcement of the discovery produced a sensation; it was opposed, but not by the younger physicians. Among those who discerned its significance was the philosopher Descartes. The material effect was not fortunate. Harvey's medical practice fell off. Patients feared to put themselves under the care of one accused by the ignorant and envious of being crack-brained, and of putting out new-fangled and dangerous doctrines. This fate of great innovators is still not unknown. There was fortunately one man in a high place who showed lively interest in the discovery. Charles I supported Harvey and appointed him his personal physician. It is interesting to reflect that this monarch, whatever opinion may be held of his other qualities, by aiding Harvey and Van Dyke, showed himself an enlightened patron of art and science.

The past one hundred years have seen the triumph of the experimental method; the deepest problems of which we are aware have been explored with confidence because of the perfection of method and of instruments of extreme precision. It is usual to date the beginning of what we are pleased to call the present or modern era of medical research from the establishment of the germ origin of disease. In truth, no such sharp distinction as this is to be drawn; the germ theory of disease is a logical outgrowth of the state of development of chemistry and physiology in the middle period of the nineteenth century,

and those two sciences had contributed then, as they continue to contribute in ever-increasing volume, to the store of biological knowledge. And yet, there is truth in the view that new impetus and new hope were suddenly brought into medicine through the pregnant discoveries of Pasteur, Lister and Koch, which did so much to aid the growth of preventive and curative medicine. The pursuit of microbiology, the science of the infinitely little, is still under full swing. The newer studies have brought the knowledge of parasite and host, the animal and plant, into closer and more equitable relationships, and have thus shown a way by which epidemics on an experimental scale may be investigated profitably among laboratory animals and made to yield information valuable in itself and even informing in respect to epidemics in man.

Perhaps, no subject of wide investigation has yielded more startling and valuable information than that relating to the physiologic effects of the so-called internal secretions. If, indeed, we wish to correlate present-day outlook in medical practice with earlier happenings, we could choose no more fecund example than the master work of Claude Bernard on the sugar-liberating functions of the liver, to which he first applied the phrase. Contemporary investigation by physiologic and chemical messengers, or so-called hormones of the body, through which many of its functions are integrated, has been rich in surprising rewards.

There is no sharp line between health and disease, and no sharp distinction between the functions called physiologic and pathologic. A knowledge of the body will include all the biologic processes with which we can deal. The vocation

of medicine is multiple; hence, the need for specialization. In recent times, the scientific medical investigator has also become a specialist. Since medicine is one of the biologic sciences, it is natural to ally it with biology as an educational discipline. But this definition has become too narrow. The growth of medical science, as a biologic science, has brought it into more and more intimate relationship, first with classical chemistry and now with classical physics, to the great benefit of both medicine and biology. A generation ago we saw the rise of biochemistry as an independent subject of research and knowledge; today we are witnessing the beginnings of biophysics as a similar independent subject. There is hardly a direction in which classical chemistry and classical physics are moving forward, in which biology and medicine do not promise presently to follow. These circumstances call for specially trained men possessing the temper and aptitudes of the investigator to pursue medical research. Indeed, so formidable has become the demand for the investigation of medical problems that particular provision is being made in universities and special institutions founded to fulfill this demand. On all sides the persons with these qualities are being scrupulously sought in increasing numbers. In order to provide for them the most favorable opportunities for work, a kind of organization of research, is being undertaken.

Among investigators the rarest are those men with a presentiment of new truths; the far greater number merely develop and follow the ideas of others. In a few instances the presentiment is extraordinary, but it is always likely to be a brilliant example of the scientific use of the imagination. Of the first or-

der of magnitude was Harvey's assumption of the existence of minute vessels uniting the arteries and veins and completing the circuit of the circulation. In his day the microscope was too primitive to reveal them; in fact, Malpighi's discovery of the capillaries occurred four years after Harvey's death and thirty years after the publication of the "Motion of the Heart and Blood in Animals." Great men are just those who bring with them new ideas and destroy errors. They do not, therefore, respect the authority of their predecessors and they do not move in an ordered way. Great men have been compared to giants upon whose shoulders pygmies have climbed, who nevertheless see further than they. This simply means that science makes progress subsequently to the appearance of great men, and precisely because of their influence. The result is that their successors know many more scientific facts than the great men themselves knew in their day. But a great man is, none the less, still a great man, that is to say—a giant.—SIMON FLEXNER: *Science*, 66-69 (July 22) 1927.

#### ANENT RESEARCH

In industry where the cost of doing anything is checked very closely, it has been found that a trained research man whose salary is about \$300 per month requires materials and man-power assistants costing \$450 per month at least. That is to say, the research cost per hour, assuming a 200-hour month, is \$4.00. The work done in the university costs less because, in view of the fact that the student doing his research gains by learning how he should approach a problem, he is paid nothing for the time he puts in, although he may work his

way through by teaching part time for which he is paid. Assuming that the incidentals cost just as much in academic work as they do in the industries, that is, the working space properly furnished, heated and lighted, the laboratory facilities, the administrative expenses, the time of the man assisting the student, we reach a figure of approximately \$2.25 per hour, plus the effort of the worker. If a doctor's thesis takes two years of nine months a year and the research occupies the candidate eight hours a day during the academic year, then we reach a figure of \$6,480 as the cost of a doctor's thesis. Multiply this by the number of researches of this kind being carried out and we find that the people of the country are spending millions of dollars on academic research of this type alone. Any industrial firm spending such an enormous sum would be highly critical of the results obtained. Academic research is not properly scrutinized. Research problems can only be chosen by men who have a research instinct; by men who are following up a lead which may mean a real advance in our knowledge. Such men are rare and therefore my first change would be in limiting the number of academic institutions in which research is done for advanced degrees. This calls for a great unselfishness, while I am afraid that inevitably selfishness is characteristic of the attitude of the academic body to its students, perhaps unconscious, but arising out of the situation. Thus if a senior has shown great promise it is natural for the graduate school to try to keep him when they should send him to another university where he will find the man best able to lead him on in the lines which he has chosen. Of course, if the graduate school of his own university can conscientiously hold him be-

cause they believe they can give him the best that there is in the country, then they are justified in doing so, but they should be extremely critical. In furthering this improvement I should like to see the undergraduates acquire some critical faculty of their own, just as they do in Europe. This, I believe, can be brought about only by getting away from the idea that the university is merely a finishing up of an ordinary education and by adopting the European belief that it is a great advantage to move from one university to another, which can be done there without loss of effort.—Rose, R. E.: *Science*, 66:118 (Aug. 5) 1927.

## Book Reviews

**MANUAL OF SURGERY:** (Rose and Carless). For Students and Practitioners, by Albert Carless, C.B.E., M.B., M.S. Lond., F.R.C.S., and Cecil P. Wakeley, F.R.C.S. Eng.; F.R.S. Edin. Twelfth Edition. 1927. 1545 pages; 639 illustrations and 19 color plates. William Wood & Company, New York. \$11.00.

As a textbook in surgery, this work may be regarded as being almost a classic, although it has been in use for more years in England than it has in the United States. One cannot but wonder how many medical students have thumbed its pages since the appearance of the first edition in 1898. Since then it has had many reprintings and twelve revisions, with translations into Hungarian, Chinese and Arabic. It has grown steadily in size until now its pages number 1484, with a splendid index of 60 pages. Here is much food for thought. The increasing size of so-called textbooks calls for serious con-

sideration of just what should be placed between the covers of a textbook. Would it not be well to begin to print books that will serve the needs of the medical student, apart from the reading practitioner? The rapidly increasing number of postgraduate medical students must be heeded as well, and the question arises, "Should they have a textbook? Should there be two textbooks—one for undergraduate and one for postgraduate students? Finally, should there be a separate book for the practicing physician who cannot avail himself of further study in a medical school but who is anxious to keep abreast of progress in surgery?"

It has already been hinted, more than once, that there is great need for re-writing textbooks for undergraduate students. That these books should be written from the point of view held by curriculum makers of today. Inasmuch as it is impossible to teach students everything known in any one subject even if the whole curriculum were devoted to it, therefore, selection of teaching material is of first importance. To assist in this job, both teachers and students, especially the latter, should have suitable textbooks. It must be self-evident that the book under discussion, good as it is, cannot possibly serve as a textbook for the undergraduate medical student who devotes not more than 600, possibly 700, hours to surgery, including its specialties. Of course, much of the subject matter contained therein is properly taught from other chairs in the school, and much of it is never taught at all in undergraduate schools.

In the present instance, it would seem that the following chapters could be omitted without detracting from the value of the work as a textbook. In fact, if it is true, as has been said and



printed, that surgery is, after all, only a form of therapy, then textbooks on surgery should restrict themselves to matters of surgical technic and whatever pertains thereto. Other things would be taught from elsewhere. But, to return to the chapters suggested for omission: I. Bacteriology, Infection and Immunity; II. Inflammation; III. Blood in Health and Disease; IV. Gonorrhea and Syphilis (except the surgical part); VIII. Tumors and Cysts (except the surgical part); XIX. Orthopedic Surgery; XXVII. Brain and Meninges; XXVIII. Jaws and Lips; XXIX. Nose and Pharynx; XXX. Mouth, Throat and Esophagus; XXXI. Ear; XXXIX. Kidneys; XL. Bladder and Prostrate; XLIII. Female Genital Organs, Appendix on Military Surgery, the Radiographic Supplement, the value of which is seriously questioned. The reviewer is certain that the chapter on anesthesia is of no use whatever inasmuch as anesthesia, if taught at all, is always taught by an anesthetist and not by any one connected with the department of surgery. The suggestion might be entertained that textbooks of this sort be published in parts, like Quain's Anatomy. The student could purchase any or all, and be given opportunity to "trim his sails" to his pocketbook. The cost of medical education to the student has kept pace with the cost of medical education to the school, and the student is less able to meet his needs in this direction than is the school. To pay \$11.00 for one textbook, most of which he cannot use, and probably never will, is quite a serious drain on his finances.

The purely surgical parts of this book are exceedingly well handled and presented fairly well in keeping with the trend of modern thought, although, here and there, the authors exhibit the per-

sonal train of thought strongly. For instance, they do not mention splenectomy for pernicious anemia; in fact, the operation is dismissed with comparatively few words. It must be taken that this represents the opinion of the authors, with which one should not quarrel, but should it not be the rule at least to mention all current thought? So, too, mercurochrome is not even mentioned as of value in the preparation of operation wounds; in fact, it does not appear in the index. But, one must forgive the authors for this omission inasmuch as they attempt to keep alive the use of Harrington's solution for this purpose, giving it a place by the side of tincture of iodine. The chapter on the use of physical agents in surgery is excellent, although one might omit descriptions of apparatus and the discussion of the treatment of lupus and ringworm which could not, even with the greatest possible exercise of one's imagination be considered surgical diseases. Physical therapy, as an adjunct to surgery, is rapidly increasing in importance, and here is a good discussion of the subject, one which cannot fail to have value for the medical student, whether undergraduate or postgraduate.

Another splendid chapter is the one on Hemorrhage, but here, too, it would seem that limitation to important or significant hemorrhages would save space and reading effort. Much good advice is given in the chapter on fractures and that on diseases of the bones and joints. The use of bone plates is deprecated and the value of massage and mobilization is stressed. That is good advice. The chapter on amputations is well worth reading, even though the practitioner may never be called to perform 95 per cent of the amputations described. Why try to tell everything known about every-



thing in one book? Many conditions are discussed for which there is no surgical therapy. Should these be included in a textbook on surgery for students? (Or, is the term "students" used in its broadest sense?)

On the whole, however, the work is to be commended highly and that, no doubt, is the reason for its popularity as a textbook on surgery. The mechanical work is beyond criticism, except the size of the volume, and that is not the fault of the publisher.

A SYNOPSIS OF SURGERY. By Ernest W. Hey Groves, M.S.; M.D.; B. SC. (Lond.); F.R.C.S. (Engl.). Eighth Edition, 1927; 674 pages; 149 illustrations and 13 color plates. Price, \$5.00. William Wood & Company, New York.

This is an epitome on "the salient facts in surgery" and is based on Rose and Carless Manual of Surgery. It is intended to serve as an aid to memory in retaining a vast array of facts in an orderly manner and not to replace its "progenitor." As such it is no doubt of value; in fact, its smaller size would lead one who is trying to master the art of surgery to prefer it, leaving the larger book for further development. The book could be made still smaller by omitting the 149 illustrations. Most of them are worthless so far as teaching value is concerned. The color plates of surface markings are good. They cannot fail to be a help to the student who is pressed for time and harried by requirements. The construction of the book permits of quick and ready reference. Principal points only are stressed. As to the text itself, it naturally possesses whatever faults the Manual has. Students, and teachers, will find it a good book because it fits in well with modern pedagogic views which demand

that the student do much collateral reading. This book gives the lead for such reading.

DISEASES OF THE NOSE, THROAT AND EAR. For practitioners and students. Edited by A. Logan Turner, M.D., LL.D., F.R.S.E., with the collaboration of J. S. Fraser, M.B., F.R.S.C.E., J. D. Lithgow, M.B., F.R.S.C.E.; W. T. Gardiner, M.C., M.B., F.R.S.C.E.; G. Ewart Martin, M.B., F.R.S.C.E., and Douglas Guthrie, M.D., F.R.S.C.E. Second edition, revised and enlarged, with 234 illustrations in the text and 12 plates, eight of which are in color. William Wood and Company, New York, 1927. \$6.00.

Four hundred and forty pages, including the index and an appendix of formulae and a section on peroral endoscopy. In this relatively small space, by the use of type slightly smaller than usual in American text books, but easily legible, and by the wonderful economy of words that only the Scotch can achieve, the subjects mentioned are covered with sufficient detail for practical purposes, and nothing of consequence omitted so far as I can see excepting that operative technic, while giving all essential points, is not in sufficient detail for the inexperienced. A recent addition to our surgical resources, drainage of the cisterna pontis lateralis for septic meningitis, is briefly described, but too briefly. The guillotine operation for tonsillectomy is credited to an Englishman, whose operation is a modification of Sluder's and a year later, although further on, Sluder's operation is merely mentioned and dated. In the tests for malingering deafness the Stenger test for unilateral deafness is omitted, and it is one of the best.

Altogether the book is a marvel of completeness and conciseness.

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